Herbert F. Lionberger

Adoption of
New Ideas and Practices

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Adoption of New Ideas and Practices

A summary of the research dealing with the acceptance of technological change in agriculture, with implications for action in facilitating such change.

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and State Universities
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Preface

This book is one of a series dealing with research in human communication. Others in the current series include:

Legibility of Print by Miles A. Tinker

Measurement of Readability by George R. Klare

The development of these books was sponsored by the National Project in Agricultural Communications and published for the use of students, specialists, and researchers in the several fields concerned with various aspects of communications.

NPAC operates under the auspices of the American Association of Land-Grant Colleges and State Universities and has been supported financially by the W. K. Kellogg Foundation and the institutions and organizations that have participated in its activities. Its program has been one of research, training, and service activities designed to contribute to the improvement of communications in agriculture and home economics. Housed at Michigan State University throughout its life, it became a formal part of that institution's structure in March, 1960.

* * *

HERBERT F. LIONBERGER, author of this book, is perhaps one of the half dozen best known men in the field of rural diffusion research. Born in Middletown, Missouri, March 5, 1912, he received his B.S. from Northeast Missouri State

College in 1936 and his M.E. and Ph.D. degrees from the University of Missouri in 1941 and 1950, respectively. His experience includes five years as a rural school teacher, three years as a high school teacher and principal, and three years as first an immigrant inspector and then district administrative services and personnel officer for the Immigration and Naturalization Service, U. S. Department of Justice.

He joined the staff of the University of Missouri in 1946, where he is presently a professor of rural sociology. He is a member of the Midwest Sociological Society and the Rural Sociological Society and has served as Secretary-Treasurer of both organizations. He serves as a consultant in the agricultural relations division of the Tennessee Valley Authority, and as an educational research advisor for the Ford Foundation in India.

He has been active on national and regional committees for the study of the diffusion of farm information and new farm practices, and has been actively engaged in research relating to these subjects for over a decade. The results of his extensive researches have been reported in scientific journals and agricultural experiment station publications.

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Introduction

Almost every organized group is concerned with educating or influencing somebody. Industry, labor, and management have their own public relations programs. Churches are dedicated to perpetuating and extending their religious beliefs. Individuals continually try to influence the thought, feeling, and action of others. At the same time, nearly all of us admit we do not communicate with each other or educate each other as well as we might. We admit the need for new and improved methods. Since few people are pessimistic about finding goals and better ways of achieving them, the need for better communication is generally recognized.

Land-grant institutions recognize this need also. They have contributed generously to the vast body of research directed at changes occurring in farming and homemaking and at reasons for their acceptance. Rural sociologists alone have written no less than 100 research reports about the diffusion of farm information and the adoption of new farm products.

The accumulated research provides a wealth of information from which conclusions and generalizations may be drawn. However, little of this generalizing or concluding has been done in written form and been made available generally. Anyone wanting to use the findings, say, to plan educational programs, must go to the original research literature. This he would find difficult for sheer volume alone, if for no other reason. A busy educator, for example, is not likely to have the time or the inclination to read the vast literature written mainly by researchers for other researchers. This book is an attempt to overcome some of these problems and make the findings of farm practice adoption research more readily available to those interested but busy people who can make use of them.

The bulk of this book is devoted to a review of the studies which deal with the communication and adoption of ideas and practices. Most of them have been conducted by researchers in land-grant institutions. *The first chapter, however, is a brief but comprehensive summary of the research findings presented from the point of view of how they may be applied in educational and informational programs.*

Subsequent chapters, 2 through 9, consider in detail the research dealing with the way changes in farm practices take place and the influences operative in the change situation. The stages through which individuals seem to go in accepting new ideas and practices are described first. In Chapter 3 the *rate* of change is considered, along with characteristics of people, and why they vary in the speed with which they adopt new ideas and practices.

The next six chapters deal specifically with personal, social, and situational factors conditioning the rate at which change takes place. Sources of information and personal influence in decisions to accept new ideas and practices are emphasized.

Chapter 4 discusses the role of specific information sources and/or media.

Chapter 5 reviews studies directed to the special functions performed by individuals in the adoption process and the characteristics of those most instrumental in performing them.

In Chapter 6, findings are presented regarding social factors which condition the communication of information, the exercise of personal influence, and the adoption of new farm practices.

In Chapter 7, research findings regarding the generalized influence of material possessions are reported, as well as local definitions of what is permitted and what is right and wrong in farming.

Chapters 8 and 9 deal with the personal reasons why people vary in the rate at which they accept change and the conditions which tend to make a person more prone to change at one time than at another.

These eight chapters should be of interest to those wishing to have more than summary knowledge of the research findings related to the process by which changes in farm practices take place, and the influences that condition acceptance rates. They should provide an introductory base for the serious student of the field, and be a useful guide to the pertinent research literature. Research-oriented people may find Chapter 10 of particular interest—it presents the view of one researcher as to the achievements and deficiencies of the research relating to the diffusion of farm information and practices.

Three Bibliographies are appended. The first includes an annotated listing of research studies cited in the summary analysis; the second, a listing of studies somewhat more peripheral but nevertheless pertinent; and the third, a listing of general publications related to basic ideas and concepts and to the design of this report. This last group also has been referred to by footnotes included in the text of the report.

The author is indebted to C. E. Lively and John S.

Holik of the University of Missouri staff for helpful suggestions and comments regarding the manuscript; to Rex Campbell, graduate assistant, for assisting in abstracting research findings upon which the report is based; to John M. Parsey, research director for the National Project in Agricultural Communications, for continued guidance and professional assistance; to D. E. Wells of the Project for editorial assistance, and to the Iowa State University Press, through which publication has been effected. The author is further indebted to the National Project in Agricultural Communications for providing the funds that made this project possible; to the publishers of *Rural Sociology* and *Social Forces* for permission to reproduce Tables 1 and 3 and Figure 5 of this book; and to the Missouri Agricultural Experiment Station for approving listing of this book as No. 2063 of its Journal Series.

Part I

Applications to Educational Programs

The generalizations and implications that can be drawn from farm practice adoption research are summarized as a guide for developing educational programs which advocate change.

1. The Action Implications of Farm Practice Adoption Research

The Adoption Process and the Function of Information Sources

The decision to adopt usually takes time. People normally do not adopt a new practice or idea as soon as they hear about it. They may wait several years before trying the idea for the first time, and longer still before permanently adopting it. To be sure, some decisions are made quickly—but many others require extended thought and deliberation. The final decision to use a new practice is usually the result of a series of influences operating through time.

For many practices, people appear to go through a series of distinguishable stages:

Awareness—the first knowledge about a new idea, product or practice;

Interest—the active seeking of extensive and detailed information about the idea, to determine its possible usefulness and applicability;

Evaluation—weighing and sifting the acquired information and evidence in the light of the existing conditions into which the practice would have to fit, *Trial*—the tentative trying out of the practice or idea, accompanied by acquisition of information on how to do it;

Adoption—the full-scale integration of the practice into the on-going operation.

These five stages are not necessarily a rigid pattern which people follow, nor a set of exclusive and discrete categories with no overlap. Rather, they represent five sequences that can be clearly identified very frequently by both researchers and farmers.

The average time between initial information and final adoption varies considerably by person, place, and practice. For the adoption of hybrid seed corn in Iowa, the time-lapse was about five years. At least 20 years have elapsed since the practice of applying fertilizer according to soil test was first recommended and adoption still is not complete—yet we can be fairly sure that many nonadopters have been aware of the recommendation for a long time. During the same period, some of the new insecticides have been introduced, received major acceptance, and then just as quickly been discarded as still newer and more effective ones have been developed.

All people do not adopt at the same time. There are always some persons who adopt first, some who adopt later, and some who adopt last—and for some practices and ideas, some who never adopt. The rate of adoption in a community or area is usually slow when a practice is first introduced, with a much more rapid rate of acceptance later on. In fact, most of the adoptions occur in the later periods of the adoption cycle. It took nearly twelve years after first introduction to secure nearly complete acceptance of hybrid seed corn in Iowa, with only about 6 per cent adopting during the first six years.

Final adoption is not always permanent adoption. Even though a person has decided to fully adopt a new practice and has integrated it into his on-going operation, there is no guarantee he will continue indefinitely to use it. The educator who feels that continued use is desirable needs to try to reinforce the acceptance decision of the adopter and to counteract competing influences. Accounts of success with the new product or practice from known and trusted sources, should be helpful as reinforcement.

Information sources vary in their functions. Sources of information vary in relation to both the *stage* of adoption the farmer is in and to his relative *position* in the adoption cycle. At the awareness stage, mass media—newspapers, magazines, radio, television—are the most frequent source of information about new ideas and practices. The one exception is the late adopter, who is more likely to first learn about a practice from other farmers. At the interest stage, the mass media and other farmers again rate high as information sources, but for somewhat different reasons than at the awareness stage. Various agricultural agencies are likely to be important at this second stage, too, particularly for early adopters and in connection with practices involving changes in techniques or farming operations.

Other well-regarded farmers become the most useful sources at the evaluation stage. They are considered to have the requisite experience and are readily available for consultation. They are also likely to be sympathetic to the needs of the information seeker and to understand his problems.

For the "how do I apply it?" questions arising at the trial stage, several sources are most frequently used. Salesmen and dealers commonly supply the answers to questions concerning commercial products. Other farmers continue to be important, particularly for questions closely related to existing farming operations. For more complex practices less closely related to existing operations, the county agent, vocational agriculture teacher, and other such professionals or specialists are in demand.

Finally, at the adoption stage, when a farmer has decided in favor of continued use of a new idea or practice, self-satisfaction and the satisfaction of others to whom he often refers are most important. For some, research findings from government and industry help reinforce decisions made; for others the experiences of other successful farmers are most important.

Use information sources selectively. Unless farmers' usual habits change considerably, mass media can be relied on as quick and efficient means of notifying farmers of new developments. This is particularly true of local newspapers and magazines. Success stories and stories featuring pertinent details about the new practice will create interest and move people toward favorable decisions.

At the evaluation stage, any means of increasing interpersonal contact with other farmers, particularly influentials, should prove beneficial. Skillful use of group discussion techniques should facilitate contacts among potential and successful adopters, influentials, and key communicators.

At the trial stage, any means of providing "how to" information will be worth the educator's attention. Dealers, product labels, and other commercial sources can be relied upon to supply information about commercial products.

For complex practices, specialists, and farmers with the requisite experience are preferred information sources. It is important that the information available at this stage include *where* the farmer can go for materials, products, and further information; for example, "you can get the information you need from your county agent," or "you can get this material at the local drugstore."

Information sources are adaptable. The research evidence indicates that certain information sources typically perform certain specifiable functions in the adoption process; for example, radio is a supplier of information primarily at the awareness and information stages. Evidence also indicates that a given source frequently performs other functions as well. In a number of cases, radio has performed a legitimizing or "okaying" function important at the evaluation, trial, and final adoption stages. Information sources can be used most effectively when there is an understanding of the interrelationship between source and function, the needs of individuals at given stages of the adoption process, and the requirements for keeping them continually moving toward final adoption.

Duplication of effort can be avoided. Examination of the roles played by information sources and the reasons for these roles suggests the need for continued cooperation between colleges of agriculture and mass media outlets. Evidence indicates that college publications do not always provide the information that farmers *think* they need in regard to new technology. Nor do they give them the knowledge about local conditions necessary for making management decisions. This does not mean, however, that such information is not being made available to farmers by other means, such as mass media. For the colleges to acquire the mass-media type facilities needed to collect and quickly disseminate information of this nature would be costly. It would likely be wasteful duplication of effort.

✓ **Use existing decision-making habits.** People form habit patterns of doing things; this includes the ways they go about considering alternatives and arriving at decisions. The five stages of the individual adoption process are a rough, general approximation of the typical decision pattern. The important point to be made is: it is almost always easier and more fruitful to work within existing patterns than to try to short-circuit or change them.

Individuals are important information sources. Regardless of practice, or place, or person, adoption decisions almost always involve other individuals as information sources. They may provide initial knowledge of the practice, definite advice as to the course of action to be taken, or reinforcement of decisions already made. They may be specialists or outsiders, but are more likely to be fellow farmers personally known and trusted.

The person sought for advice is usually more competent. Especially in areas where a premium is placed on up-to-date farm information and quick adoption of new farm practices, the farmer sought for advice is likely to be more competent, as a farmer, than the seeker. The net effect of such communicative exchange is to raise the general knowledge level and facilitate the adoption of new farm practices. However, in areas where emphasis is placed on extreme caution in accepting new practices, this latter effect cannot be expected. These same statements can also be made about given individuals within different communities.

Persons sought for advice are usually more exposed to direct information sources. This means that persons so situated are in a position to pass on what they learn from industry, agricultural experiment stations, vocational agriculture teachers, county agents, and others to those who are much less inclined to use such sources directly. In a very real sense, these persons whose advice is sought act as information gatekeepers. They decide what and what not to pass on, and they interpret and evaluate what they do communicate to others.

Some persons are much more sought for advice than others. Educators can usually accomplish more by working with these farmers than with those less sought and correspondingly less influential. In communities where a premium is placed on quick, successful adoption of new practices, the key communicators and influentials are likely to be much more receptive to new ideas, more prone to change, and more inclined to use direct information sources. They are likely to have higher incomes, higher prestige, and be better educated. It is possible to develop messages specifically for these people without knowing who they are as individuals; for example, mass media messages can be constructed for a higher intellectual level if they are to be directed at influentials than if directed at the more nearly "average" farmer.

Some farmers will accept advice from an influential friend when he would not accept it from government agencies or industry. Thus, the influential person can become a low-resistance avenue for reaching less receptive farmers. However, this channel of communication with the less receptive farmer can be lost quickly if the influential's influence is impaired or destroyed in the process. When influentials are singled out for conspicuous preferential treatment, it is quite possible to damage their prestige to the point that they are no longer looked to for advice. A television testimonial, for example, may incur serious doubts about both the merits of the product or idea being advocated and the sincerity of the person conveying the message.

Individual identification of influentials is not always as easy as it might seem. The people who are most willing to cooperate in an action educational program are not necessarily those who have the most influence. The opinions of people in the community are much more likely to reveal who the influentials really are.

Influentials and innovators are not always the same persons. Especially in areas where local norms dictate close adherence to locally tried and tested ways of farming is it likely that the person sought for advice will not be the innovator who is first to try out new ideas. The innovator is an active seeker of new ideas while the influential in a conservative community is much more likely to require considerable convincing.

Persons sought for advice frequently have higher status than the seekers. This seems to be true regardless of the measure of status—income, education, or size of farming operation. However, there is a definite limit to the amount of status difference the seeker of advice will cross. Clear-cut social class differences tend to sharply limit communication between classes and it cannot always be safely assumed that new ideas and practices adopted by high status persons will diffuse downward to others in any reasonable length of time. On the other hand, this assumption can usually be made in situations where class and status differences do not interfere with interpersonal communication and the exercise of influence.

From the standpoint of energy expended and effective use of resources, it may be better most of the time for the educator to depend on the late adopters and skeptics being influenced by personal communication from respected associates rather than try to reach them directly, even though this may take considerable time. The wider the status differences in an area, the longer this is likely to take. Such people typically allow other farmers to assume the risks of adoption first and to legitimize the adoption of the practice in question. For an educational agency to attempt to assume these roles would be difficult and costly. The advocator of change must set his goals realistically, taking into account his own needs as well as the situation among those with whom he is communicating. If he decides that it is desirable to have quick adoption by people who normally wait for others to try the practice first, he probably should first attempt to speed the process by which these others normally come to try the idea. Only if he is willing to expend the effort and money should he attempt to bypass this process and directly convince the late adopter and skeptic of the value of his recommendation.

Skeptics may play useful roles in adoption. In a rapidly changing society, the role of the skeptic as a stabilizing influence should not be overlooked. Skeptics may insist on evidence that innovators and early adopters ought to have before first trial or adoption. Changes may come so fast that community life and values are disrupted. Maintenance of some degree of stability is necessary.

What's good for the big farmer may not be for the small. The small farmer, rather than follow the lead of the big farmer as he sometimes seems to do, might better develop plans and procedures specifically suited to his smaller operation. By the same token, it might be well for the educator to do much the same thing in developing recommendations for improved farming practices.

Educational efforts can be modified as adoption progresses. A good deal of effort is often necessary to obtain the first few adoptions, which means that the advocator may work for some time without seeing many results. However, when he is successful and changes begin to take place, results tend to snowball with subsequent adoptions coming with little or no additional expenditure of energy. When the opinion leaders are in the "fold" and interpersonal communication patterns begin to carry the load, the educator's job may be largely done except to reinforce the adoption decisions already made.

Selected Factors and the Acceptance of Change

Practices compatible with existing ideas and beliefs are most likely to be adopted quickly. If farmers get recognition and gain status by planting straight corn rows, planting of planned crooked rows for conservation purposes will not be viewed with favor. People also may refrain from adopting new farm practices for religious reasons, as with the Amish who refuse to buy tractors or telephones.

The farmer must perceive a need for the new practice. He is not likely to be much concerned with something like grasshopper control until he is confronted with a serious infestation. In Wisconsin, the use of grass silage increased only very slowly for eight years, but increased sharply during a two-year drought. Recommended practices for control of blue mold of tobacco went largely unheeded in North Carolina until many farmers had experienced high losses from the disease. Clearly, rapid change is quite likely to follow crises such as drought, flood, low prices, or insect infestations.

Cost is a factor. Ordinarily, changes that cost little will be adopted more quickly than those requiring large expenditures. Of course, the farmer must see an advantage in adopting, and expect satisfaction as the result. He must also possess the required resources and be willing to take the risk. Individuals vary a great deal on these counts.

An easily demonstrable practice may be more quickly adopted. The killing effect of a new insecticide can be easily, understandably, and convincingly demonstrated; the influence of a change in amount or grade of fertilizer much less so; and the benefits of a selective breeding program even less.

Social groups influence adoption rates. People belong to many groups, each of which tends to set up some standards of behavior for its members. The reward for conformity to these standards is acceptance and prestige; the penalty for nonconformity is loss of them. Some of the groups to which a farmer belongs may have standards of "proper" farming behavior, including degree of receptivity to new ideas and change.

Social groups can usually be expected to facilitate interpersonal communication among members about farming problems and questions. Such groups provide a person with ready access to others with similar interests and problems where opinions can be sounded and trustworthy advisors found. Retention of "trade secrets" is not in accord with prevailing definitions of a good neighbor. Sincerity, honesty, and fair dealing with fellow farmers are expected.

The neighborhood exerts an influence on adoption rate. Residence in low adoption neighborhoods is conducive to slow acceptance of change, with the opposite true in high adoption neighborhoods. In the latter, people are expected to be alert to new ideas about farming and to be quick about accepting them. Similar behavior in a low adoption neighborhood would likely result in lost status, since in such areas it is not considered "right" to be liberal or to get too far ahead.

The satisfied man doesn't change much. For adoption of new practices to take place in areas where residents either do not know or are complacent about changes taking place around them, there must be a feeling that the present situation is not necessarily the best or the only way to reach their goal. Dissatisfaction with conditions as they exist, followed by awareness of alternatives, is prerequisite to change. Effective ways of bringing this about include increasing their contacts with the rest of the world, exposing them to a number of ideas regarding conditions that need changing and telling them of the means to make such changes as have worked elsewhere. Once people have learned that all things are not as they are locally, and that change is both possible and desirable, ways and means of achieving desired ends can be suggested effectively.

Families vary in their adoption behavior. There is likely to be a high adoption rate in families where the father is receptive to new ideas and practices, or where other members of the family may be studying vocational agriculture in high school or participating in 4-H club work. Activity in 4-H work accompanied by a favorable attitude toward it has been frequently found associated with high adoption rates.

The social clique influences adoption patterns. Interpersonal communication is facilitated in the social clique, which is a closely knit friendship group composed of a relatively few people of about the same social status who find each other's company mutually satisfying. Frequently, the norms and standards of such a group lead individual members to make decisions they might not otherwise make. Clique leaders have been found useful in working to change habits and practices.

People are influenced by groups of which they are not members. A person may identify himself with a group he does not belong to and act as he thinks a member of such a group should. These reference groups may be specific or quite general in nature; an example of the influence of the latter is the farmer who runs his farm operation the way he perceives all "good farmers" running theirs.

Group processes can effectively advance an educational program. People are inclined to respond to the pressures and opinions of groups in which they participate, and to consult others before arriving at final decisions about farming operations. The educator will find in working with a group that the group discussion technique is usually far superior to the straight lecture approach in getting firm and more nearly unanimous decisions. However, there is a risk attached—the group may arrive at an unfavorable decision which will be exceedingly difficult to overcome.

People's values may either speed or retard change. Values are the *importance ratings* of things, conditions, and circumstances, and are the product of group definition. The values of accumulating material wealth and a high standard of living tend to be associated with high adoption rates. On the other hand, the values of security, debt-free farm ownership, and traditional farming methods are found to be associated with low adoption. Adherence to certain religious values may also retard change.

Educational programs must take values into account. A direct attack on values that are obstructing change may generate antagonisms and make the educational job much more difficult than it already is. Over a long period, it is frequently possible to modify such values and create a more favorable point of view. However, short-term educational programs had better be developed in deference to the existing value structure.

Value-changes result from widened horizons. Farmers exposed to many sources of information and having many contacts outside the immediate locality are more likely to be receptive to change than those who are restricted in their contacts. The evidence indicates that increasing receptivity frequently follows increased contact with people and ideas from beyond the community boundaries, particularly when these contacts are directly related to the changes being advocated. Mass media can play a substantial role in this, as can methods of increasing participation in formal social groups, particularly those which help spread information about new methods and practices. While broad social orientation does not insure competence as a farmer, it does seem to make incompetence less likely.

Some people are more prone to change than others. Just why this is so is not definitely known. Farmers quickest to adopt new practices are inclined to use objective facts in their decisions, and to rely heavily on institutionalized sources of information. They tend to view farming as a business operation rather than as a way of life, and their aspiration level is likely to be higher than the average in the community. The more change-prone farmer is usually willing to try new ideas after experimental trial by a reputable research organization—the less change-prone person wants to see the idea tried locally and approved by people personally known and trusted.

Old dogs can be taught new tricks. Older farmers, on the average, tend to make fewer changes in farming and to be less receptive to change than younger men. This does not mean that educational programs directed at older people will not be successful. The needs of the older farmer are somewhat different than those of younger men, and receptivity to new ideas may be directly related to how well they fit the needs of declining years and physical energies.

Formal education is associated with adoption. Farmers with high school or college training generally have higher incomes and adopt more new practices than those who ended their schooling at the eighth grade or before. However, the kind of schooling appears to be more important than the amount. People trained in vocational agriculture, for example, are seldom found in the low farm income ranks.

Part II

Review of Research Studies

This section is concerned with what research reveals about the way change takes place and the influences that operate in relation thereto. The eight chapters in this section deal with stages of diffusion, adopter categories, sources of information, personal influence, and the personal, social, cultural, and situational factors that condition the rate at which change takes place.

2. The Individual Adoption Process

People ordinarily do not accept new ideas or practices immediately upon hearing about them. The time from initial knowledge to final acceptance may range from a few days to many years. Also, a decision to change is ordinarily the product of a sequence of events and influences operating through time rather than an abrupt metamorphosis. This section is devoted to the concept of *stages* in the adoption process and the *influences* which operate in relation thereto.

Stages

Antecedents to the use of stages for studying the individual adoption process are found in the work of Dewey, Mead, Johnson, and others.[1] Ryan and Gross (83, 84), who asked farmers to indicate where they learned about hybrid seed corn and the sources of information that were most useful in helping them decide to try it, were perhaps first to use a stage concept to study the adoption of a farm practice. In a North Carolina study, Wilkening (92) sought sources of first contact, contacts for most information, and most influential contacts. Later, four stages, which were labeled (a) initial knowledge, (b) acceptance of the practice as a good idea, (c) acceptance on a trial basis, and (d) adoption of practice on own farm, were used (94). A committee of rural sociologists (87) subsequently added a fifth stage to the sequence. The five were then referred to as *awareness, interest, evaluation, trial,* and *adoption.* Modifications, mostly in name only, are represented by substitution of an information designation for interest, and mental trial or acceptance for the elusive evaluation stage (7).

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[1] John Dewey, *How We Think* (Boston: D. C. Heath & Co., 1933), pp. 106-7.

George Herbert Mead, "Stages in the Act: Preliminary Statement," in Anselm Strauss (ed.), *The Social Psychology of George Herbert Mead* (Chicago: Phoenix Books, 1956), pp. 97-119.

Donald M. Johnson, *The Psychology of Thought and Judgment* (New York: Harper & Bros., 1955), pp. 445-50.

Awareness. At the awareness stage, a person first learns about a new idea, product, or practice. He has only general information about it. He knows little or nothing about any special qualities, its potential usefulness, or how it would likely work for him (9, 87).

Interest. At this stage the farmer develops an interest in the new thing that he has learned about. He is not satisfied with mere knowledge of its existence. He wants more detailed information about what it is, how it will work, and what it will do. He is willing to listen, read, and learn more about it, and is inclined to actively seek the information desired. It makes little difference whether we call this the information or the interest stage. The personal need of the individual making the decision remains much the same.

Evaluation. At the evaluation stage a person weighs the information and evidence accumulated in the previous stages in order to decide whether the new idea, product, or practice is basically good, and whether it is good for him. In a sense, he reasons through the pros and cons mentally, and applies them to his own situation. Perhaps this stage could very well be referred to as the "mental trial stage." To be sure, evaluation is involved at all stages of the adoption process, but it is at this stage that it is most in evidence and perhaps most needed.

Trial. At this stage the individual is confronted with a distinctly different set of problems. He must actually put the change into practice. This means that he must learn how, when, where, how much, etc. Competent personal assistance may be required in putting the innovation to use. The usual pattern of acceptance is to try a little at first, and then to make large-scale use of it if the small-scale experiment proves successful.

Adoption. At this stage a person decides that the new idea, product, or practice is good enough for full scale and continued use. A complete change is made with that end in view.

These, of course, do not necessarily represent discrete, or distinctly separate, stages in the individual adoption process. Nor is it implied that they are universally followed by all people in all of the decisions they make, or that these are the most appropriate stages to use (35). What these stages do represent is a useful way of describing a relatively continuous sequence of action, events, and influences that intervene between initial knowledge about an idea, product, or practice, and the actual adoption of it. From the standpoint of use, investigators (12) have found that farm operators and wives are able to recognize these five stages in many of the decisions they make when questioned directly about them. It has also been shown (23) that these stages can be detected from a content analysis of detailed descriptions given about decisions made in the absence of specific questions regarding stages.

Variations in the Individual Adoption Process

Not all decisions involve a clear-cut 5-stage sequence. Many are made simply on the basis of habit or tradition, or at least without extended deliberation. Also, the decision sequence can be truncated at any point, or stages may be so blended that it is impossible to distinguish where one begins and the other ends. Furthermore, after final adoption any issue may be reopened for consideration and the whole process started again. This is one reason why an advertiser cannot be content with mere adoption of his product. A holding action is necessary to keep adopters in the fold.

Another type of variation involves the time lag between first knowledge about and first trial or adoption of a new product, idea, or practice. This may range from a few hours or days to several years. The time span is likely to vary with individuals, the nature of the change involved, and the situation in which the individual finds himself when he learns about change alternatives. Cost is important in this respect. The greater the cost involved, the more likely a person is to think a proposed change through carefully before adopting it. Also, the more complex the practice, the slower it is likely to be adopted. Complex practices that can be divided into much smaller parts and taken a little at a time are likely to be accepted more quickly than where this is not possible. Also, if there is a possibility for reverting back to the old practice, the time period of adoption usually is shortened. For example, when a farmer terraces his land, the way back is very difficult and expensive.

The new idea may often be incompatible with the old idea and its perceived utility. For example, contour farming requires planting of planned crooked rows. This often was incompatible with existing ideas regarding acceptable methods, and it was devoid of the status which accrued from being able to plant straight rows. Also, farmers who had to relinquish the status accorded a good seed corn selector resisted the change to commercial seed handling.

Situational factors are also important. A farmer who has not been seriously threatened by grasshoppers may delay indefinitely his choice of a product to control them. Choice of a new seed variety may be limited by what is locally available at the time the need arises. The farmer may delay a change he thinks would be profitable, because his wife is in ill health, he lacks operating capital, or his children are at an age where they require additional money. In Wisconsin (94), the use of grass silage was greatly facilitated by a series of dry years. On the other hand, the adoption rate was retarded during the war years, due to the lack of machinery.

Source Use in Relation to Stages

In considering information sources used at each stage in the adoption process, it is necessary to recognize that they represent only one type of many influences operating in changes considered and made by individuals. The reasons for change are many and complex. Some relate to the individual himself, some are social and cultural, and some are situational in nature. Figure 1 (pp. 28-29) indicates some of the individual and social factors which operate at each of four stages in the adoption process as Wilkening (94) has summarized them. These and other factors are discussed in the sections following this one.

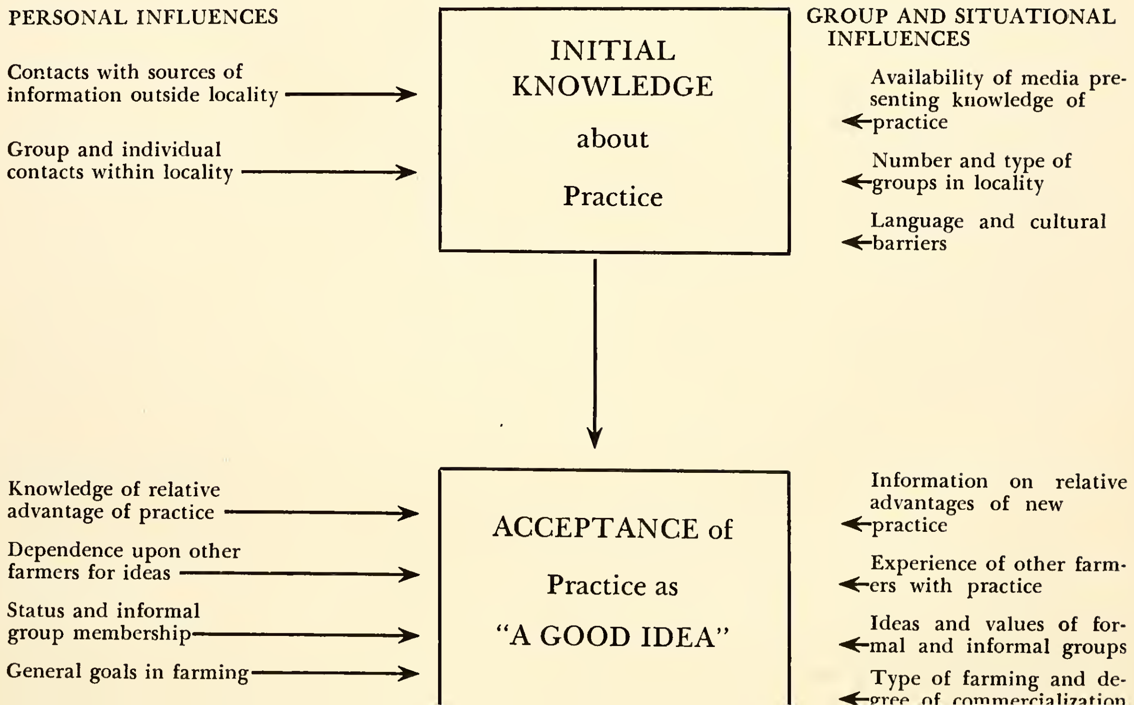
At the *awareness stage,* when the farmer learns about the new idea or practice, mass media are most used, particularly farm magazines (6, 9, 11, 23, 58). Other farmers usually rate second in importance, particularly for persons who are not among the first to adopt new ideas and practices. For the early adopters, the agricultural extension service and related agencies outrank other farmers (23). For initial information about extensively advertised new products, commercial sources are likely to be a close rival (32; 83).

At the *interest stage* when the farmer needs more detailed information about the new idea, product, or practice, accessibility of the source and confidence in it increases in importance. All things considered, either the mass media or other farmers ordinarily are most often mentioned as sources at this stage (6, 9, 11, 23, 58). The agricultural agencies, including the agricultural extension service and local vocational agricultural departments, usually rank in close third place. For those early to adopt new changes, such agencies probably are more used than fellow farmers, particularly when the idea or practice is not closely related to existing farming operations. In this case, farm magazines and newspapers are read for a somewhat different purpose than at the awareness stage. Attention is turned from mere learning about something new to finding just how successful it is and its potentiality for the reader's own farming operations. All in all, farmers do not have to be too selective of what they read, hear, and see at this stage. What is really needed is more information.

At the *evaluation stage,* when a decision regarding the basic merit of the new idea, product, or practice is required, and when considerations regarding applicability to the local situation become paramount, fellow farmers who have had the requisite experience and whose opinions are respected are the sources most in demand (9, 23, 58, 79, 83, 84). As will be seen later, this is true for both early and late adopters. Agricultural agencies rate second place for most people and for most things. To be sure, these agencies are more important for people who adopt new practices soon after their introduction than for people who adopt them later. Also, for commercial products like 2,4-D or antibiotics, commercial sources rate very high in importance (7, 11). Mass media are distinctively less used at this stage.

At the *trial stage* when information regarding application is needed, friends and neighbors usually top the list (9). This is especially likely to be true for practices closely related to existing farming operations, and where information of a highly specialized nature is not required. Agricultural agencies usually rate second. For many commercial products local dealers rate very high in importance and may even rate above all others (6, 11, 32).

At the *adoption stage* superior performances or demonstrated merit is required. Own experience and the experience of other farmers is most important (9, 79). Mass media and agricultural agencies are useful in the degree to which they reinforce decisions already made or provide acceptable information bearing on matters of performance. Studies to duplicated


PERSONAL INFLUENCES
Contacts with sources of information outside locality
Group and individual contacts within locality
INITIAL KNOWLEDGE about Practice
GROUP AND SITUATIONAL INFLUENCES
Availability of media presenting knowledge of practice
Number and type of groups in locality
Language and cultural barriers
Knowledge of relative advantage of practice
Dependence upon other farmers for ideas
Status and informal group membership
General goals in farming
ACCEPTANCE of Practice as "A GOOD IDEA"
Information on relative advantages of new practice
Experience of other farmers with practice
Ideas and values of formal and informal groups
Type of farming and degree of commercialization

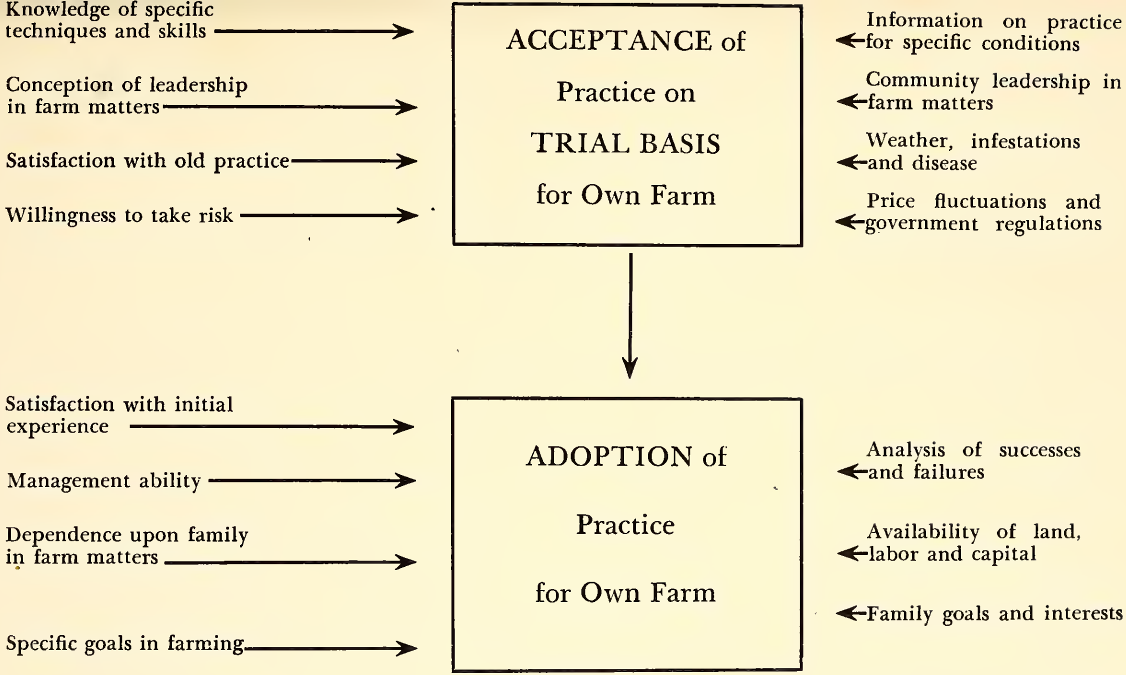

Knowledge of specific techniques and skills
Conception of leadership in farm matters
Satisfaction with old practice
Willingness to take risk
ACCEPTANCE of Practice on TRIAL BASIS for Own Farm
Information on practice for specific conditions
Community leadership in farm matters
Weather, infestations and disease
Price fluctuations and government regulations
Satisfaction with initial experience
Management ability
Dependence upon family in farm matters
Specific goals in farming
ADOPTION of Practice for Own Farm
Analysis of successes and failures
Availability of land, labor and capital
Family goals and interests

Fig. 1. The process of acceptance of new farm practices and factors influencing that process.

Source: Wilkening, E. A., *Adoption of Improved Farm Practices as Related to Family Factors*. Madison: Wisconsin Agricultural Experiment Station Research Bulletin 183, (December, 1953), p. 10.

Table 1. Per cent distribution of citations of information sources used in four stages of adopting three recommended farm practices by 175 farm operators, Lawrence County, Pennsylvania, 1957.

Stage	Information source	Spittle bug control	Grass silage	Hay finisher
Awareness	Farm magazines	30.7	35.5	33.1
	Radio	5.2	2.5	2.3
	Printed extension	36.2	17.4	20.9
	Oral extension	10.5	13.8	11.2
	Peer influence	14.3	27.9	25.1
	Commercial media	1.4	0.4	3.7
	Classroom	1.4	2.5	3.2
	Other	0.3	0.0	0.6
	Total	100.0	100.0	100.0
Interest	Farm magazines	22.5	19.3	17.0
	Radio	2.3	1.8	0.0
	Printed extension	14.0	14.9	13.2
	Oral extension	24.8	26.3	24.5
	Peer influence	34.1	32.5	37.7
	Commercial media	0.8	1.8	5.7
	Classroom	1.6	0.9	1.9
	Other	0.0	2.6	0.0
	Total	100.0	100.0	100.0
Acceptance	Farm magazines	9.0	22.0	27.3
	Radio	0.0	0.0	0.0
	Printed extension	16.4	10.0	18.2
	Oral extension	26.9	20.0	22.7
	Peer influence	44.8	46.0	27.3
	Commercial media	1.5	2.0	4.5
	Classroom	1.5	0.0	0.0
	Other	0.0	0.0	0.0
	Total	100.0	100.0	100.0
Trial	Farm magazines	4.9	14.8	12.5
	Radio	0.0	0.0	0.0
	Printed extension	52.5	33.3	29.2
	Oral extension	16.4	23.5	12.5
	Peer influence	6.6	25.9	29.2
	Commercial media	16.4	2.5	16.7
	Classroom	3.3	0.0	0.0
	Other	0.0	0.0	0.0
	Total	100.0	100.0	100.0

Source: Copp, J. H., Sill, M. L., and Brown, E. J., "The Function of Information Sources in the Farm Practice Adoption Process," *Rural Sociology,* 23, (June, 1958), pp. 150-51.

date show very little use of commercial sources at this stage. A good illustration of the manner in which source use varies with type of practice is presented in Table 1, which compares the sources of information used for spittle bug control, use of grass silage, and use of a hay finisher by a select sample of Pennsylvania farmers (23).

Although it has been seen that the sources most used at any given stage do vary with persons, local conditions, and practices, research findings are sufficient to warrant their tentative placement in a rank order of frequency of use by stages. Such a tentative classification is presented in Table 2, p. 32. Also, it is possible that generalizations regarding the use of professional, personal, and mass media sources may be extended to populations other than farmers. Some significant parallels to conditions and processes of acceptance of new farm practices are found in the influences operating among physicians in their decisions to adopt new drugs. Coleman, Katz, and Menzel (21, 67) found that professional interpersonal relations were highly influential at the early stages of the adoption of a new drug, with social patterns following closely in influence, thereby facilitating adoption by those who were highly integrated into the social structure of the medical community. Early adopters were much more likely than late adopters to have learned about the new drug from the direct sources of information, as for example professional journals. These findings closely parallel those from research relating to the adoption of new farm practices.

Table 2. Rank order of information sources by stages in the adoption process.

STAGES IN THE ADOPTION PROCESS				
AWARENESS Learns about a new idea or practice	INTEREST Gets more information about it	EVALUATION Tries it out mentally	TRIAL Uses or tries a little	ADOPTION Accepts it for full-scale and continued use
1. Mass media—radio, TV, newspapers, magazines	1. Mass media	1. Friends and neighbors	1. Friends and neighbors	Personal experience is the most important factor in continued use of an idea
2. Friends and neighbors—mostly other farmers	2. Friends and neighbors	2. Agricultural agencies	2. Agricultural agencies	1. Friends and neighbors
3. Agricultural agencies, extension, vo-ag, etc.	3. Agricultural agencies	3. Dealers and salesmen	3. Dealers and salesmen	2. Agricultural agencies
4. Dealers and salesmen	4. Dealers and salesmen	4. Mass media	4. Mass media	3. Mass media
				4. Dealers and salesmen

3. The Community Adoption Process

The General Pattern

This section deals with the fact that everybody does not adopt new ideas or practices at the same time. Ordinarily, adoptions are very slow at first. After an initial slow start, they increase at an increasing rate until approximately half of the potential adopters have accepted the change. After this, acceptance continues, but at a decreasing rate. A curve, such as that shown in Figure 2 (p. 34), may be obtained by graphically plotting the number of persons accepting a specific change against a scale of successive years with those accepting in all previous years successively added in. This gives the characteristic *S* or *growth* curve. This *S*-shaped curve was found in the cumulative proportions of farmers using hybrid seed corn in Iowa (82), the use of brome grass-alfalfa mixtures in Wisconsin (94), four improved farm practices in North Carolina (92), the adoption of a new drug by the medical profession (21), the acceptance of innovations in government by municipalities,[1] and the acceptance of adaptations in public schools (19, 71, 72, 81).

Characteristically, first adoptions take much longer from awareness to final adoption than subsequent ones. In a study

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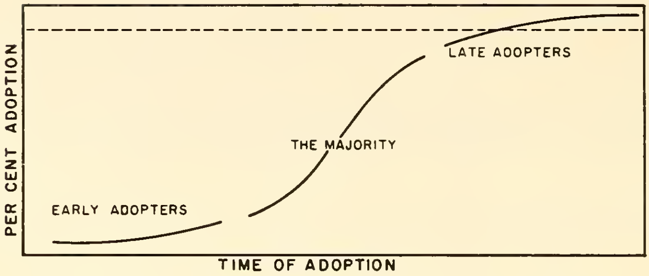
[1] F. Stuart Chapin, *Cultural Change* (New York: The Century Co., 1928), pp. 203-14.



EARLY ADOPTERS	THE MAJORITY	LATE ADOPTERS
*Distinctive Characteristics:**		
Large farms	Average farms	Small farms
High income	Average income	Low income
Take risks		Security-minded
Usually under age 50	Age 50 to 60	Usually over age 60
Actively seeking new ideas	Receptive but not actively seeking	Complacent or skeptical
Participate in many non-local groups	Participate in some local groups	Seldom participate in formal groups
*Sources of Information Used:***		
College and other research sources	Adoption leaders and other farmers nearby	Other local farmers and adoption leaders
Agricultural agencies	Farm papers, magazines and radio	Farm papers, magazines and radio
Mass media sources	Commercial sources	
Other highly competent farmers far and near	Agricultural agencies	Local dealers
Commercial sources		Almanac

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*In relation to characteristics of those in adjoining categories.

**Listed in estimated rank order of use.

Fig. 2. Characteristics of farm operators and major sources of farm information used in relation to the adoption curve.

of adaptations in public schools, Cocking (19) found that the first 5 per cent adoption took three times as long as the next 5 per cent, and that it took longer for the first 1 per cent than for the next 4. Mort and Cornell (71) found much the same thing. In adoption of hybrid seed corn, it took six years for the first 6 per cent to adopt, while over 80 per cent adopted in the next six years (82). These represent rather typical adoption patterns.

Variations in the Community Adoption Process

The time for completing the adoption cycle varies. Only a few years may be required for everyone concerned to accept a new insecticide. The hula hoop came and went in less than a year. At the other extreme, acceptance of adaptations in public schools have commonly required fifty years for near-complete adoption (19, 71, 72). It is not uncommon for ten or twelve years to elapse before relatively simple new farm practices are fully accepted (82, 92, 94). However, when the rate of change in other aspects of culture is considered, changes appear to be coming at an increasing rate. This strongly suggests that the adoption cycle for most things is shorter now than a generation ago, and that it is likely to become shorter in the future.[2]

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[2] Stuart Chase, *The Proper Study of Mankind* (New York: Harper & Bros., 1948), pp. 113-14.

The editors of *Fortune, The Fabulous Future: America in 1980* [a book of readings] (New York: E. P. Dutton & Co., Inc., 1955).

Also, the shape of the adoption curve may vary considerably for different practices and circumstances. Most and Cornell (72) found erratic acceptance of adaptations in school systems below the 10 per cent level, thus suggesting a precarious existence for such adaptations before 10 per cent adoption. Also, the initial period of diffusion may be longer for some practices than for others. The adoption of alfalfa-brome in a Wisconsin county (94) proceeded slowly for ten years, with less than 55 per cent of the farmers accepting it during that time. However, for grass silage about eight years for 10 per cent adoption was followed by a rapid climb to 50 per cent in the next two years.

Aside from time, other variations in the community adoption process are likely to occur. The typical curve has been derived largely from the reconstruction of changes after they have been made. This means that only those practices successfully adopted have been studied. If "changes in process" were to be studied, it would be found that some changes never receive general acceptance, some reach a peak at something less than 100 per cent adoption, and some actually show a decline after a characteristic initial start, as was the case when suspicion of the results of DDT on people became known.

Classification of Adopters

The fact that people adopt new ideas or practices at different times means that they can be classified in terms of their time position in the adoption pattern. The classification may be as simple as an early-late adoption division, which means that early adopters accept a given change sooner than the majority, and that the late ones accept it later than most others. A committee of rural sociologists (87) has suggested a sequence of innovators, community adoption leaders, local adoption leaders, and later adopters. This classification incorporates time sequence with function performed.

A classification system that divides people on the basis of time of adoption, relative to each other, is less confusing. Since adoption of specific changes tends to conform to the normal, or bell-shaped, curve, it is possible to classify adopters in terms of standard units and to compare an individual's position in the adoption pattern for one change to the relative position of the same individual in another. After making the necessary statistical tests with regard to normalcy, Rogers (78) used standard units to classify innovators, early adopters, the early majority, the late majority, and laggards (see Figure 3). Such a classification opens the way for more de-

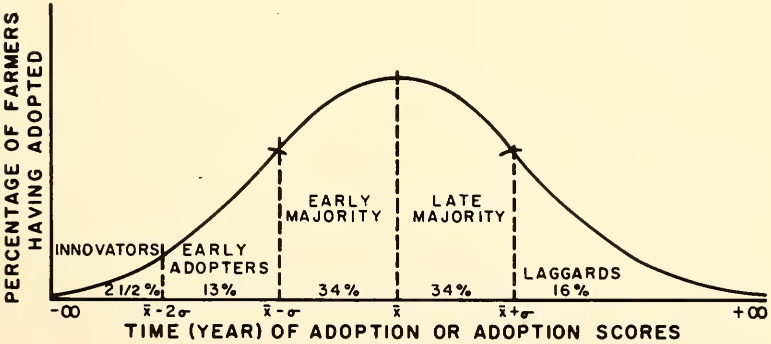

Fig. 3. Adopter categorization on the basis of adoption frequency distribution. (Inflection points indicated by x-marks on curve.)

Source: Rogers, E. M., and Beal, G. M. *Reference Group Influence in the Adoption of Agricultural Technology.* Ames, Iowa State University, 1958, p. 33.

finitive research regarding the adoption sequence, classification of individuals, and the comparison of results. However, since a general division of adopters into an early, late, and intervening (the majority) stage is sufficient to describe most known characteristic differences in relation to position on the adoption continuum, this is the classification that will be used in this report.

Early Adopters. Early adopters ordinarily have larger farms and decidedly higher incomes than the average in the areas where they live (9, 87) . They have risk capital, and are willing to take risks. They are likely to be middle-aged or less, although some farmers remain mentally alert and highly receptive to change when elderly. Early adopters seem to be generally inclined to use many new farm practices and to be among the first to try them. They participate in organizations that bring them in frequent contact with other people in the community and beyond. Broad spatial orientation is ordinarily a distinguishing characteristic. Not only do they participate in more formal groups, they participate relatively more in those that take them to the county level and beyond. Also, participation in organizations directly related to farming operations—as for example, Dairy Herd Improvement Associations—is more likely for them than for others.

The early adopters have a wide range of contacts with originating sources of farm information, and often do not wait for research findings to be published (6, 8, 23, 32) . They go directly to experiment station personnel to learn about the latest research being done. It is not unusual for an early adopter several hundred miles distant from the college to talk long distance with college personnel about problems on his farm.

The early adopters also remain in close contact with commercial research sources, but they may not be content to consult local dealers (6, 8, 32) . They may, instead, go directly to company headquarters. In general, they are actively seeking new ideas and are quick to try them. They remain in close contact with the agricultural agencies and may ask the county agent questions about things that are still novel to him. They not only use radio, television, and general farm papers and magazines more than the late adopters, but are also more likely to subscribe to and use technical publications relating to farming.

As is generally true, other farmers rate high on their information list, but they are sought with discretion (80). Merely being a neighbor is not enough. Those sought have to be judged competent to give advice on matters about which they are consulted. Distance is not nearly so important to them as it is to the middle and late adopters. One farmer in a Missouri study flew to another state to talk to another farmer who had been using a particular kind of liquid fertilizer. Although such trips are not common, trips to adjoining counties for consultation with outstanding farmers are.

Late Adopters. Late adopters ordinarily have smaller farms and subsistence operations (9, 87). They tend to be elderly, although a sizable number of middle-aged farmers are ordinarily included in this category. Many have either reached or are rapidly approaching the time when matters of security and declining physical energies are more important considerations than high-level production. Being security oriented and often more vulnerable to risk, they are inclined to adhere to the tried and tested practices which are safer (51, 80).

Farmers inclined to late adoption ordinarily participate very little in formal groups except the church, of which they are more likely than not to be a member (9, 87). Most of their social activities are confined to meetings with friends and relatives. Contacts with other persons for farm information are largely confined to other farmers in the immediate locality. However, choice is not nearly so selective with respect to technological competence as for early adopters or even for the majority of farmers (60). For most new developments in farming, other farmers near at hand are the sources of information most recognized and used. For this group, neighboring farmers may even be a recognized source of initial knowledge about new developments in farming.

Late adopters subscribe to and use general farm papers and magazines as sources of information (6, 8, 23, 32). The radio is also frequently used. With this group, the almanac is important, while the agricultural agencies are virtually out of the picture. Not only do they not use county agents, but they are likely to have unfavorable attitudes toward them as an acceptable source of information. Often local dealers who are personally known and trusted and with whom primary group relationships have been established are consulted.

The Majority. The majority in terms of the adoption sequence have about average-sized farms and income in the areas where they live, although variation is likely to be considerable (9, 87). Participation in formal groups is largely confined to organizations like the church and the local P.T.A. which tend to draw membership from the immediate locality. The great majority are generally receptive to new ideas about farming, but may not be actively seeking them. Most of their contacts for farm information are with nearby farmers, some of whom are likely to be persons frequently sought for advice about matters related to farming. They read farm information articles in newspapers and magazines but ordinarily do not read the more technical ones (6, 23, 32). They also use radio and television frequently but generally remain aloof from agricultural agencies as information sources. For some things, at least, local dealers and salesmen are important sources. (For a brief summary of characteristics and sources of information used by early and late adopters and the majority, see Figure 2, p. 34.)

Adoption Proneness as a Generalized Trait

Since research reported here is concerned with the adoption of farm and home practices, generalization with regard to propensity to make other types of change is not possible. Although Copp (24) found that the adoption of one farm practice among both cattlemen in Kansas and dairy farmers in Wisconsin was a rather poor predictor of the adoption of another, it was possible in these and other studies to readily classify farmers on an adoption continuum (60, 65, 92, 94). It would seem that this could occur only where propensity to the adoption of farm practices is more or less a generalized trait. Also, occasional findings of scalability of adoption suggest the existence of such a generalized trait (2, 24). To the extent that this is true, late adoption of one practice is likely to be associated with late adoption of others. Also, the more nearly average a farmer is in this respect, the more likely he will be to fall in the great majority, and conversely, the higher his adoption score, the more likely he is to be rated among those early to adopt new practices.

4. Information Sources and Media as Change Agents

Origin and Communication of Farm Information

New information regarding matters related to farming is commonly originated by public and private research centers and by progressive farmers. In many cases the function of origination is combined with those of transmission, evaluation, legitimation, or control. Thus industrial and public research agencies both originate and transmit information. Any communicator in the line of diffusion from the source of origin to the final destination of the message is in a position to exercise some control over what is transmitted, how, and in what form. Farmers who serve as communicators may evaluate what they pass on to others, and incorporate positive or negative recommendations. They may also make a new idea, belief, or practice locally acceptable by putting a stamp of approval on it.

The term "source" is here used to apply to people and agencies sought as sources of farm information: mass media, including newspapers, magazines, radio, and television; agricultural agencies, such as the agricultural extension service and vocational agriculture departments; and commercial sources, which primarily include local dealers and salesmen.

In some cases, dissemination of information is a planned and intended function involving a complex organizational structure and well-formulated procedures. In other cases, exchange may occur without planning and with no more structure than a chance meeting of two people with common interests.

Function of Sources

Wilkening (95) has suggested that it is possible to predict the function that a specific information source or medium will actually perform in the individual adoption process from the intended or planned function of the agency or source, the kind of organization involved (social structure), and the manner in which the communicating source ordinarily operates. His descriptive reasoning and predictions are entered in Table 3 (p. 44). Data for testing the hypothesized roles were drawn from 636 young farm operators in six Wisconsin counties, who were asked to indicate where or from whom they usually learned about new ideas in farming, when or from whom they usually got information that helped them decide whether to try a new idea or practice, and when or from whom they usually got most help on how to apply the new practice or idea. Expected roles of communicating agents for these three purposes were substantiated in all cases except for the commercial sources, where it was hypothesized that they would rate high as sources of first knowledge, but didn't.

Mass Media. In general, mass media are most useful as sources of initial information, with farm magazines and farm papers being used more frequently than newspapers, radio,

Table 3. Major functions and structural features of four types of communicating agents for farm information and expected roles of these types in the acceptance of changes in farming.

Type of Communicating Agent	Major Functions	Structural and Operational Features	Major Expected Role with Respect to Change
Mass media (farm papers, farm magazines, newspapers, radio and television)	a. providing information of widespread interest b. selling advertising	a. impersonal contact b. frequent contact easily accessible c. content of general interest d. one-way communication	a. first knowledge
Other farmers (neighbors, friends, relatives)	a. social status b. solidarity c. mutual aid d. response e. recreation	a. personal contact b. frequent contact usually incidental to primary group functions c. content oriented to local and personal experiences d. two-way communication	a. help in decision-making b. instruction in putting change into effect
Agricultural agencies (county agent, vocational agriculture instructor, college of agriculture, Soil Conservation Service, etc.)	a. disseminating information on specific practices b. teaching basic principles of farming c. providing special and technical services	a. personal and impersonal contact b. contact limited primarily to those seeking information c. content of general and of specific and local interest d. two-way communication	a. instruction in putting change into effect b. help in decision-making
Commercial sources (business firms and private professionals)	a. buying and selling materials and equipment b. professional services	a. personal and impersonal contact b. contact incidental to buying, selling and special services c. content oriented to economic and to special interests d. two-way communication	a. instruction in putting change into effect b. first knowledge*

**This expected role of commercial firms is not supported by the findings of this study.*

Source: Wilkening, E. A., "Roles of Communicating Agents in Technological Change," *Social Forces*, 34, (May, 1956), p.363.

or television (6, 7, 9, 11, 23, 32, 58). Farm magazines and to a lesser degree newspapers, also serve a very useful function of instruction. They supply information about the nature of the change, how it works, and the results achieved or likely to be achieved. To be sure, they are a factor at other stages in the adoption process, but they are distinctly of less importance.

Studies relating exclusively to radio as an educational medium in the diffusion of farm information are few in number, and throw little light on the role actually played in the sequence of influences involved in bringing about change. An intensive study of radio listening by the Department of Agriculture, Bureau of Agricultural Economics (18), showed a high interest on the part of farm people in farm information programs. However, in a Louisiana study (13), where a high proportion of farmers were in no position to make their own decisions regarding farming operations, both interest and exposure to radio farm information programs were low. Studies by *Wallaces' Farmer and Iowa Homestead* (88) in 1947, 1951, and 1955 show a tendency for use of radio as a source of farm information to decrease.

Evidence regarding the role of television in the individual adoption process is inconclusive. There is some evidence that it can be effectively used in conjunction with group meetings (33); also, that publications are a useful device for supplementing educational television programs (100).

A study of the impact of farm and home shows in a Missouri county (56) showed a relatively high rate of program subject recall among open country household heads and wives, and activation ranging from mere conversation with others regarding programs seen to actual trial of ideas on the part of approximately 37 per cent of both the household heads and wives. When direct questioning has been used to determine the influence of television on decisions to adopt new farm practices, it has been infrequently mentioned at all stages in the adoption process. Nevertheless, as an NBC before-and-after television study (85) quite conclusively revealed, television advertising sharpened awareness of brand names, riveted brand name to the product and its use, drove home the trademark, sold the slogan, enhanced brand reputation, resulted in shifts of brand preferences, and impelled people to buy TV-advertised brands. Without doubt the potential of television as an educational media has not been fully realized. It has not yet been institutionalized as a source of farm information as in the case of radio and farm journals.

Other Persons. Other persons (mostly farmers) are most used at the evaluation and trial stages, particularly the former (6, 7, 8, 9, 11, 23, 58, 79). When a final decision must be made, it is other farmers most of all who are consulted. This is particularly true for new practices associated with existing farming operations where professional specialized knowledge is not required (90). For late adopters other farmers lead the list as a source of information at the awareness stage as well as at the later stages. The tendency to rely on others similar in kind for evaluative purposes is common among people other than farmers.

Some farmers are more involved in the diffusion process than others. Also, the same farmer may perform different functions for different people. Who the other person is and the groups with which he is associated are important determining factors. Chapter 5 deals with these special functionaries, their distinctive characteristics, and the roles they play in the diffusion process. The manner in which groups condition personal influence is discussed in Chapter 6.

Agricultural Agencies. Agricultural agencies (agricultural extension service, vocational agriculture teachers, etc.) are most used at the evaluation and trial stages (7, 9, 23, 32, 58). They head the list for early adopters in general and as sources of information for all adopter groups about the special qualities and use of such complex practices as soil and water management. The fact that such agencies ordinarily are designed to render other services to farmers, as well as disseminate information, tends to strengthen their position as information sources. For example, the county agent ordinarily is in a position to test soil samples for farmers and to interpret the results.

Although research in relation thereto is lacking, these agricultural agencies, particularly agricultural experiment stations, may also exercise an important influence on continued use of a new practice. Experiments are conducted and the results made known to the public. The information thus supplied can serve as a partial basis for decisions regarding continued use.

Commercial Sources. Generalizations regarding the role of the dealer and other commercial sources in the individual adoption process are difficult because findings vary greatly. Even so, results indicate most use at the trial stage (7, 8, 9, 11, 23, 58). This is understandable, since much of the new equipment and many new products require special instructions for proper use. Greatest use at the trial stage is even true for the adoption of many new farm practices which don't involve new equipment or products. Even though dealers may not be the major determining force in decisions to change, they very frequently enter into discussions leading to decision. Also, exceptions to the general pattern of most use at the trial stage are sufficient to indicate that commercial sources can be a determining influence in decisions involving the final adoption of new products or practices. Certainly they are in a very strategic position to communicate information, to instruct, and to help evaluate.

In isolated cases where dealers were also fellow farmers, they have been able to serve both as reinforcing agents and as determining influences in final decisions to change (58). As is true for other information sources, how dealers will be used, for what they will be used, and the confidence placed in them is largely dependent upon their reputation in the local community.

Why Functions Vary

Copp, Sill, and Brown (23) offer a 5-fold explanation for differences in functions of informational sources in the diffusion process:

(a) institutionalization of information sources,
(b) the temporal sequence of information sources,
(c) the possibility of negative recommendations,
(d) scheduling limitations of the sources, and
(e) the need for local legitimation.

Two additional explanations may be added, namely, (f) individual perception of the source as a means of obtaining farm information, and (g) the need for 2-way communication at the evaluation or decision-making stages of the individual adoption process.

Since mass media agents have at their disposal well-organized means of collecting and disseminating new information, they are able to reach a wide audience quickly. When anything new is available, local publishers, broadcasters, and telecasters are usually among the first to know about it. Farmers have recognized this and have come to rely on newspapers and magazines to get ideas about new developments quickly. Perhaps television still is in the process of institutionalization in this respect. It is also possible that it may not yet have won a reputation as a good place to learn about new ideas in farming. Impressions often gathered in interviewing Missouri farmers were that television is regarded essentially as a means of entertainment and not as a way to get farm information (58).

Radio, television, and to some extent periodicals are at a disadvantage when evaluation and decision are required. The scheduling of material in these media lends itself to timely and orderly presentation, but with the exception of periodicals, not to subsequent reference and review when reference is required. This fact alone makes radio and television less satisfactory for fulfilling needs that develop after initial awareness. Also, the mass media do not lend themselves to two-way communication, and none are able to relate new information to the specific situation of the individual farmer. For some farmers, local trial and demonstration is a necessary prerequisite to use of a new idea or practice. The next best thing to actual trial on their own farms is advice of another farmer who is known and trusted and who has had the required experience. All other information sources are at a disadvantage in this respect.

The educational service agencies have the advantage of an institutionalized structure for collecting and disseminating information about new developments in farming. They are the repositories of farm information and in some cases the creators of it. For them, dissemination of information is a business. Agency materials are usually available when needed and 2-way communication with agency representatives is possible. Also, for many people the college of agriculture, the county agent's office, the vocational agriculture teacher, and other local public agency representatives are regarded as legitimate and socially acceptable sources of farm information. Innovators and early adopters know that they can depend on agency sources for timely information about new developments in farming.

Commercial sources, particularly local dealers, are readily accessible, and are in a strategic position to communicate with their customers. Although they usually have ways of readily obtaining information about the products they sell, they are not always well informed. When they are and when they gain the confidence accorded fellow farmers, they are in a position to act as legitimators. Since they sometimes are not well informed and do not have the confidence of their customers as credible advisors, it is not surprising that so many studies show that dealer influence is most operative after a decision to use or to try has already been made.

Other farmers do not have institutionalized ways and means of obtaining new ideas quickly, nor do they ordinarily possess facilities for disseminating what they learn, except by word-of-mouth. They are not in the business of disseminating information. Maintaining a fund of up-to-date information and keeping other farmers up-to-date does not constitute a usual role expectation of the rank and file farmer. Although fellow farmers cannot be relied upon to get new information, they are in a position to offer advice with the information they transmit, and to incorporate positive or negative recommendations. They can relate what they read, see, and hear to the local situation. Two-way communication and specific relation to the information-seeker's own situation is possible. Also, the close friend or associate is available when needed and can be trusted to respond with the interests of the information-seeker in mind. It is little wonder he is so useful when evaluation and decision are necessary.

5. Special Functionaries in Diffusion

Different people perform different functions in the adoption of new ideas and practices. This is why it is possible to talk about *special* functionaries. Examination of how friends and fellow farmers are involved in decisions to change farm and home practices, and of what people expect of them in their quest for information, makes it possible to detect what some of these special functions are. First of all, a new idea, product, or practice must be introduced locally (innovation). Assumption of this responsibility and the attendant risk is a necessary part of the diffusion process. A second obvious function is that of communication. This simply refers to the fact that people habitually talk to each other about their farm problems. Advisement is another function. People who seek information from others often want advice along with the facts. They may even seek clear-cut answers to their own personal problems. Others seek reinforcement for decisions already made. Hearing someone agree with them makes them more comfortable and confident in the decisions that they have already made. In still other cases, a local stamp of approval is sought from highly respected sources. It is obvious that not "just anybody will do." This act of putting a stamp of approval on something in a locally acceptable manner is referred to as "legitimation" in this book.

Since some persons are more likely to perform these functions than others, it is possible to determine who they are and to examine their special characteristics. They are usually defined by the number of times they are mentioned as performers of special functions, as, for example, the communication of information. This section is directed to the way these special functionaries are detected, their distinctive characteristics, and the role they play in the diffusion process. Those selected for special consideration are innovators, key communicators, influentials, and skeptics.

Innovators

Innovators are the first to introduce new ideas or practices, and generally have a reputation in the community for doing so. In farm practice diffusion research, they have ordinarily been defined in terms of the readiness with which they have adopted one or more new farm practices, even though the practices adopted have already been tried and tested by agricultural experiment stations and perhaps progressive farmers elsewhere. Wilkening (93) differentiated community and neighborhood innovators in terms of the adoption of eight improved farm practices. The former adopted each of the practices from one to seven years earlier than the latter. Rogers and Beal (8, 78, 80) arbitrarily defined innovators as the first 2½ per cent to adopt. Lionberger (58) considered the matter of innovation in relation to communicative functions.

Characteristics. Being operationally defined as among the first to adopt new practices, innovators have many of the characteristics of early adopters (9, 87). They tend to have larger farms than average for the areas where they live, and have the necessary capital and willingness to take risks. They are usually not past middle age. However, young farmers who would like to deviate from locally accepted ways of farming may not find it possible to do so, either because of lack of capital or restrictions imposed by those who own the farms or furnish the capital with which to operate them.

Some studies have shown that innovators may not enjoy the highest status in the community, particularly where norms are not favorable to substantial changes in farming methods (8, 9, 76, 93). Frequently innovators know they are different and feel that neighbors are waiting and wondering when they will go broke. Impressions gained from those who are not innovators tend to verify this feeling.

Innovators are mentally alert, and actively seek new ideas about farming (9, 87). They often go directly to college and industrial research sources for information (6, 8, 23, 32). Although the county agent rates high on their information list, they often bypass him in favor of originating sources, and often learn about new things before he does. They sometimes manage to get samples of seed or chemicals before they are released for public use. Entomologists sometimes complain that innovators want a new insecticide before its effect on people is known and before legal clearance has been obtained. Innovators know what their neighbors are doing, but are not greatly impressed by what they think or what they do. They have many formal and informal contacts outside the immediate locality. They seek advice from other farmers, but primarily from those who are progressive thinkers like themselves.

Functions. Although innovators may not be frequently sought as sources of farm information, neighbors are almost certain to watch them closely. Perhaps it is proper to say that they are watched but not followed. Temporary success of an innovator ordinarily is not enough; the "watchers" must see the new thing tried by farmers who are more trusted for their good judgment (32, 93). Whether followed or not, innovators perform an important function in the diffusion process. They assume risks that others are not willing to take, and provide the local trial necessary for legitimation in the eyes of persons more skeptical or cautious than themselves about new farming methods and practices. Where change is viewed with skepticism innovators bear the stigma of being the first in the neighborhood to try the new. Perhaps the resultant loss of status locally is not too important to them, because what they lose locally is likely to be gained from their own kind and from those more amenable to change.

Key Communicators

Key communicators are persons who are more important in the communication of information than others. They are generally defined in terms of high mentions received in response to questions regarding persons as sources of information used for general or specific purposes. They have been called "opinion leaders," "local leaders," "adoption leaders," "informal leaders," "communicators," or just simply "leaders." Wilkening (93) defined them as persons named as sources of farm information by two or more persons in response to a question directed to that end. Lionberger (52) used much the same type of questioning, but required five or more mentions and referred to them as "influentials." Marsh and Coleman (64) required two or more mentions as information sources for specific practices to qualify as a "leader," while Hoffer (39) defined "community leaders" in terms of their presumed likelihood of being able to get new ideas accepted among farmers in such areas as dairying, farm management, and soil conservation. Fanelli (29) designated "high" and "low communicators" on the basis of mentions as consultants about selected community problems. Rogers (77) more recently used a self-designating question to find persons frequently sought as sources of farm information. These were designated as "opinion leaders."

Characteristics. Although there is a general tendency for key communicators to possess characteristics similar to early adopters, important variations do occur (9, 87). In a North Carolina study, Wilkening (93) found that persons sought as sources of farm information (referred to by him as local leaders) tended to reflect the traditional values of the communities studied. Since local leaders are expected to uphold and to adhere to locally accepted standards, and since these standards dictated caution regarding the speed with which new ideas in farming were to be accepted, it would be most unlikely that persons sought for advice in farming would depart very much from locally accepted standards. This was indeed the case. Key communicators had adopted only slightly more improved farm practices than the average for others in the community. Innovators, who enjoyed less prestige and who were less concerned with local norms regarding farming, were decidedly out ahead in farm practices adopted.

In a Missouri community (52) where a premium was placed on alertness to new developments in farming and successful use of them, people most frequently sought as sources of farm information were distinctly out ahead of most others in the area with respect to farm practices used. Although not always first to adopt the new, they were among the first. Most of them would have been classed as innovators by definitions currently in use. Being much more active in social groups and more likely than others to hold positions of leadership in the community, they were highly accessible to others as sources of farm information. Although they enjoyed much higher prestige, social distances attending these differences were not sufficient to serve as serious barriers to communication. This is readily apparent by observation of lines of communication between information seekers and "key communicators" in Figure 4, p. 58.

Key communicators were actively seeking new ideas and made more use of all information sources, except the almanac, than other farmers. This was particularly true of the technical and the originating sources. They sought farmers as sources of information, but used care who they selected. Also, their contacts were much more broadly oriented, both with respect to subject and to space.

Functions. Although by definition key communicators are more involved in the communication of farm and home information than other persons, they almost certainly perform other functions in the diffusion process. As communicators of information they are in a position to select what they transmit, to shade it with their own interpretations, and to incorporate either positive or negative recommendations. This may be precisely why they are sought as sources of information by some. Also, since person-to-person communication about matters related to farming is selective and purposeful, the exercise of personal influence is almost a certainty. It has already been shown that key communicators are sometimes also instrumental as innovators.

In a series of Missouri communities (58, 60) where norms were favorable to rapid changes in farming, innovators and

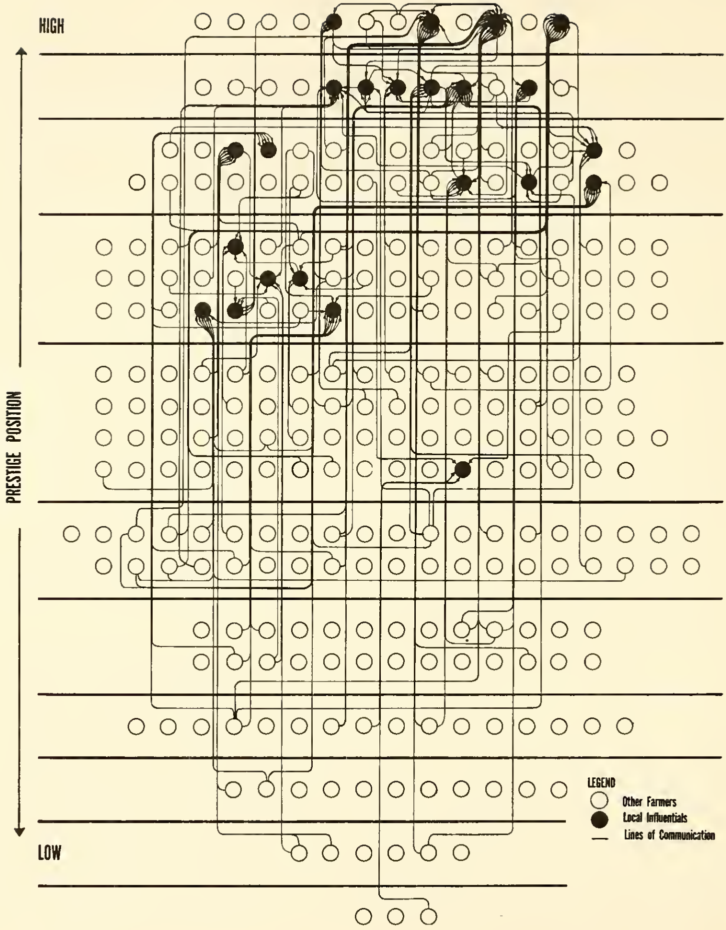

Fig. 4. Prestige position of "local influentials" and farm operators seeking farm information from them.

Source: Lionberger, H. F., and Coughenour, C. M., *Social Structure and the Diffusion of Farm Information*. Columbia: Missouri Agricultural Experiment Station Research Bulletin 631, (April, 1958), p. 30.

persons most sought for advice tended to be one and the same. The same was not true in a North Carolina area (93) where norms were not favorable to rapid change. Marsh and Coleman (64) suggest differences in the importance attached to change proneness as the possible explanation of differences in findings between the Missouri and North Carolina studies. In areas where farm practice adoption levels were high, farmers chosen as sources of farm information had adopted more new farm practices than those who sought their advice; while in areas of low adoption, farmers tended to pick others at about their own level. It would thus appear that in areas where alertness to new developments in farming and quick acceptance are status factors, innovators and persons sought as information sources are likely to be one and the same. Where local norms dictate caution with respect to change, they are not likely to be.

Influentials

The meaning of the term "influentials" is elusive and subject to varied use. Here it is used to refer to individuals who are alleged to have exercised a determining influence in one or more decisions of other persons. Usually unverified claims of influence on the part of the influencer or the one influenced are accepted as a basis for the definition (45, 58, 68). A less time consuming but also less reliable method of identifying influentials is to rely on the opinion of key informants.

In a study of local and cosmopolitan influentials, Merton

(68) required for designation four or more mentions in decisions involving job selection, educational plans for children, and selection of furniture, plays, and books. Katz and Lazarsfeld (46) required verified influence dyads in marketing, fashion, public affairs, and movie selection as the requirement, while self-designation was permitted in a study of personal influence in voting behavior (48). In the latter case, any claim of influence on others was deemed sufficient to designate the person as an influential. In a Missouri study (58) of factors involved in decisions to change farm practices and purchase farm supplies, influence was inferred by designation of specific persons as most important or influential in final decisions to use or to change. Three or more mentions were required for the highest influence classification.

Characteristics. The characteristics of local influentials described in this report are based primarily on two Missouri communities (57) : one in the Ozarks where conditions are generally unfavorable to farming, and where it is generally assumed that farmers are more inclined to use traditional farming methods than elsewhere in the state (Ozark); and one from the prairie regions of northwest Missouri where conditions are very favorable to farming, and where people are generally regarded as most favorable to change (Prairie). In Prairie, where corn-hog-cattle operations prevail, and where farm incomes are among the highest in the state, amount of schooling was an important distinguishing characteristic between influentials and persons not so named. In Ozark, where dairy and subsistence operations prevail, and where farm incomes are low, schooling made very little difference in those named as "decision-clinchers." In both communities influentials had larger farms and much higher incomes than those never mentioned as decision influencers.

Influentials were highly accessible to other farmers for information and advice. They were distinctively more active in formal groups which provided opportunities for contacts, and were named as close friends and associates twice as often as persons never named as decision influencers (48).

Like key communicators in progressive communities, they were much more receptive to new developments in farming than those not named, and were using many more improved practices (57). Farmers in Ozark who were not mentioned as a major influence in one or more decisions were using only 30 per cent of the 34 improved farm practices which were applicable to their farms, while those mentioned three or more times were using 65 per cent. In Prairie, comparative figures were 48 and 72 per cent, respectively.

Influentials were much more inclined to use all sources of information than farmers not so named (Table 4, p. 62). This was particularly true for such direct sources as the college of agriculture, the county agent, and the vocational agriculture teacher. The broad social orientation of local influentials is further conducive to the acquisition of new information about farming. It is likely that chances for obtaining new ideas from other farmers increase roughly as the outward orientation of the individual increases. The reasoning is simply that a person is more likely to get new ideas at meetings where farm people from a wide area are present them at local meetings where ideas discussed are more likely to be common knowledge already. One measure of this outward orientation from the immediate locality may be obtained by a participation score in extra-localistic social groups. This simply is a score based on amount and kind of

Table 4. Per cent of farm operators classified by source of farm information used and by number of mentions received as a farm practice decision influencer, Ozark Community.

INFORMATION SOURCES USED	NUMBER OF INFLUENCE MENTIONS Total	None	1-2	3 or More
	(Per cent)	(Per cent)	(Per cent)	(Per cent)
County agent	55.0	52.1	66.7	71.4
Vocational ag. teacher	17.7	15.6	23.1	42.9
University of Missouri	14.7	12.5	23.1	28.6
PMA Office	39.1	34.9	53.8	71.4
PCA Office	8.4	8.4	7.7	28.6
College bulletins	39.9	40.1	35.9	57.1
Adult classes	4.3	3.1	5.2	28.6
Farm meetings	42.0	39.6	46.2	85.7
Daily newspaper	29.8	26.0	41.0	71.4
Local newspaper	44.2	43.8	43.5	57.2
Magazines	91.2	89.6	97.4	100.0
Almanac	37.4	37.5	35.9	42.9
Television	19.3	16.7	30.7	28.6
Radio	89.5	89.1	92.3	85.7
Dealers	30.7	30.7	30.8	28.6
Dairy route men	25.3	24.0	30.7	28.6
MFA route men	10.1	8.8	12.8	28.6
Feed company representatives	10.5	9.9	15.4	0.0
Other farmers	96.6	95.8	100.0	100.0
Own children	32.8	32.3	35.9	28.6
Wives	72.7	71.9	77.0	71.4

Source: Lionberger, H. F., "Characteristics and Role of Local Influentials in the Diffusion Process, Ozark and Prairie," paper read at the Seminar of the Foundation for Research on Human Behavior on "Adoption of New Products: The Influence of Individuals and Groups," (November and December, 1958).

social participation in formal groups that involve members outside the immediate locality, as for example county and community-wide meetings. Scores of this kind for those mentioned three or more times as a decision influencer were almost twice as high as for those not mentioned in Prairie, while in Ozark the ratio was 5 to 1 (48).

Functions. Since the influentials in the Missouri study were frequently mentioned as sources of information as well as of influence, they performed an important communicative function (57). Like key communicators, they are able to select and interpret the information they transmit and to incorporate positive or negative recommendations with their messages to others. They are in a position to give advice and to serve as reinforcers of decisions already made. Being more exposed to almost all reliable sources of information than those who seek them for information or advice, they are able to pass on what they read, hear, and see to others. Farmers who are inclined to be late adopters of farm practices are often willing to accept advice from fellow farmers when the same or better advice may be wholly unacceptable from less trusted communicating agents. Therefore, key communicators and influentials often provide low resistance avenues for reaching with educational materials persons less receptive to changes than themselves.

Another important function performed by persons most sought for advice and as sources of information is that of legitimation. When influentials put their stamp of approval on an idea, product or practice, it is regarded as acceptable by most people. When these special functionaries adopt a new practice, the adoption curve takes the characteristic sharp upward turn. When this happens it is likely that adoption by other farmers will continue in rapid succession, even if educational efforts by outside agencies are reduced or even eliminated.

Sometimes when local norms dictate that a young farmer should farm much as his neighbors do and that new developments in farming should be adopted with great caution, innovation may result in a loss of both status and influence (93). Nevertheless, the most mentioned influentials in the Missouri study were also most mentioned as innovators, as the data below show (57).

Number of mentions as an influential	Median number of mentions as being first to try new ideas in farming (Innovator)	
	Prairie	*Ozark*
None	0.6	0.6
1-2	0.8	0.8
3 or more	2.5	3.5

Concentration of Influence. The degree to which influence is concentrated in few or many persons is important in considering the role of influentials and key communicators. Two Missouri studies are pertinent in this respect. One showed that one-third of the farmers interviewed in a general farming community got farm information from 22 of 279 farm operators interviewed, and that another 11 per cent had consulted with those who were in direct contact with the 22 referred to as influentials in the study (52). Preliminary findings from a study of over 1,000 decisions to adopt new farm practices (57, 58) in two widely different communities revealed that one farmer-dealer in each of the two communities was named as the most influential in final decisions in 13 per cent of the cases in one community and

15 per cent in the other (Table 5). Others also received a disproportionate number of mentions. Concentration of influence in a relatively few people was contrary to findings in urban situations, where the exercise of influence tended to be relatively well distributed throughout the prestige structure and where people were inclined to seek counsel from people at about their own status level (46, 68).

Table 5. Per cent of farm operators mentioning specified sources of farm information as most important in final decisions to adopt new farm practices in Ozark and Prairie.

Source Named as the Most Important Influence	Per cent in *Prairie**	Per cent in *Ozark**
Total	100	100
Other persons (mostly friends and neighbors)	26	28
Farmer-dealer (1)	13	15
Agricultural agencies and professional	21	12
Radio	5	8
Television	0	1
Local newspapers	1	1
Magazines	10	7
Dealers	11	11
Observation of results	3	2
Own experience	0	2
Situational	5	3
Other	1	1
Unknown or no response given	4	9

Source: Lionberger, H. F., "Characteristics and Role of Local Influentials in the Diffusion Process, Ozark and Prairie," paper read at Seminar of the Foundation for Research on Human Behavior on "Adoption of New Products: The Influence of Individuals and Groups," (1958).

Also unlike findings from the urban situation, influentials in farming seem to be influentials in more than one thing. In the Missouri communities more high-mention influentials than noninfluentials were members of elective, administrative, and advisory groups, which tend to be reserved for highly respected persons who have a reputation for good judgment and fair dealing (52, 57). Influentials and key communicators also held a greatly disproportionate number of offices and important committee assignments in other formal groups. Further evidence of their specificity or generality of influence is lacking. Perhaps the influentials in these rural communities were similar to urban, locally oriented influentials (46), who also showed some tendency toward generalized influence, in contrast to cosmopolitans, who tended to be professionals and influential in only one thing.

In the final analysis, it seems likely that the specificity with which influence is exerted will vary in some consistent manner with the degree of secularization that happens to exist within the particular society. The more secular the action and thinking of the people, the more likely influence is to be exercised on a monomorphic basis.

Skeptics

Those who are slow to adopt new ideas or practices and who insist on more than average evidence of acceptability are generally viewed with disfavor by educators because such persons serve as barriers to change. However, the positive role of skeptics should not be discounted. They may insist on evidence that innovators and early adopters ought to have before first trial or adoption. They may help prevent costly mistakes that might otherwise occur. They provide an element of stability in a rapidly changing society.

6. Social Factors in Diffusion

People do not live apart from others and independent of their influence. We are all members of many social groups or systems. This is a requirement for achieving desired ends for self and society. A person, first of all, belongs to a family. Whether a son, daughter, father, mother, or other relative, he must conform to the role expectations of the family in order to maintain a position of esteem within the family and respect by society as a whole. Few decisions can be made without regard for others who are involved directly or indirectly.

Whether a farmer lives in a neighborhood or a community, he always has neighbors. He is not at liberty to disregard their interest and expectations, at least if he has any concern about what they think of him. This means that neighbors must be and are considered in many of the decisions that people make. For example, a farmer may refrain from plowing his corn in order to help a neighbor harvest his hay. Deference to neighbors and friends in at least some matters related to farming is more likely than not. Since neighborhoods differ in the importance attached by residents to the acceptance of change in farming and to the status accorded persons who are quick to adopt new practices, their influence on change may be considerable. This is particularly true for persons highly responsive to group pressures.

Since farmers now tend to have greater freedom of movement and broader interests, they may become more selective in their associates. Accordingly, associates are more likely to be selected on a congeniality or social clique basis than on a locality (neighborhood) basis. Although social cliques may serve as neighborhood substitutes in supplying social needs of individuals, they may be no less instrumental in influencing the thinking, feeling, and action of members.

Also, varied special interests have developed in American society and formal groups have been organized to promote them. Such groups develop rules of entry, participation, and conformity. To remain a member in good standing, one must conform to group expectations. Members are not free to make decisions contrary to group interests.

Group influence may even occur in the absence of actual membership. A person may identify with a real or imagined group of persons, as for example the great middle class or the loosely conceived aggregate of "good farmers," in which case he may feel an obligation to comply with assumed expectations. Aside from real or assumed group affiliations, status differences may structure patterns of communication and the exercise of interpersonal influence. For example, if a university student gets into trouble he almost certainly will not go to the president or even to the dean of students unless required to do so. He likes to talk the matter over with other students who may be more sympathetic to his problems. In like manner, small farmers may be reluctant to discuss farm matters with large farmers because of the social distances that may exist between them.

Even in the case of mass media, messages are not received in a vacuum. The social context in which the receiver finds himself is a determining factor in exposure, evaluation, and action (84). More specifically, it is likely: (a) that people who are members of certain groups respond differently to some messages than those who are not, (b) that group membership may dispose or deter exposure to a message, (c) that people who are members of groups with norms favorable to the message are more likely to respond favorably than those who are members of groups with norms that are not, (d) that response may vary with the importance that the receiver attaches to his group membership, and (e) that overt response is related to the accessibility of appropriate social mechanisms for the expression of the suggested action.

Locality Groups

Locality groups are composed of people in a specific geographic area who have developed a feeling of belonging, or togetherness, and who tend to associate with each other more than with outsiders. Sociologists have recognized two such groupings—"neighborhoods" and "communities."[1]

Neighborhoods are ordinarily composed of a few families who know each other personally, who have a feeling of mutual concern for each other, and who claim essentially the same locality as their place of residence. They tend to associate with each other more closely than with outsiders for one or more things. Neighborhoods may center around a church, store, a local school, or even some kind of club activity. Perhaps the thing that fellow neighbors have most in common is the mutual concern they have for the welfare of each other.

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[1] Dwight Sanderson, *Rural Sociology and Rural Social Organization* (New York: John Wiley & Sons, Inc., 1942), p. 235.

Neighborhoods can be delineated by asking farmers whether they live in a neighborhood, and if so to indicate who is included in it. If there is general agreement with respect to the area designated and the people who belong, a neighborhood likely exists. Even though association on a neighborhood basis may be passing, neighborhoods still exist in some places and can be delineated.

Communities, larger and more complex than neighborhoods, may contain three or four neighborhood areas. Most rural communities are town-centered, and are composed of people living in town and those in the outlying open country who commonly go to the village center for most of the goods and services they need. Such communities may be roughly delineated by determining the village center to which farmers ordinarily go to obtain the goods and services they need on the farm and in the home. The churches with which they are affiliated, the high school that their children attend, and the business establishments where they get most of the goods and services needed locally are usually located in the community area, and more likely than not in the village center. The people in the area may not know everyone personally, but they are likely to know of each other. They are not so much concerned about matters of mutual welfare as in neighborhoods, but they do feel an obligation to each other for some of the common concerns of life.

Neighborhoods. As functioning social groups, neighborhoods tend to establish norms (standards of thinking, acting, and feeling) which serve as guiding principles for those who live within the area, while at the same time they share and live by norms of the larger society and of other groups. Group pressures operate to keep people in line with local expectations regarding many aspects of life, including the adoption of farm practices. Although neighborhoods have sometimes been regarded as an adaptation to conditions which no longer exist,[2] the fact is that they can still be identified in many sections of the country.

Norms regarding the adoption of new farm practices vary greatly. Marsh and Coleman (63) found that farmers residing in high adoption neighborhoods made much greater use of all sources of farm information, especially such sources as agricultural agency representatives, farm meetings, and farm bulletins, than those living in low adoption neighborhoods. Also, farmers in high farm practice adoption neighborhoods tended to look to farmers with higher adoption scores than themselves as sources of information, while those living in low adoption neighborhoods tended to look to those about like themselves (64). Duncan and Kreitlow (27) found that people living in heterogeneous neighborhoods from the standpoint of religion and ethnic background were more favorable to new farm and educational practices than people living in homogeneous neighborhoods.

Aside from the localizing influence on information-seeking contacts with other persons, neighborhoods may dispose farmers to rely relatively more on other farmers as sources of information than where neighborhoods are nonexistent. When asked what sources of farm information they considered most valuable, neighborhood and nonneighborhood residents in one study answered (61):

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[2] Bruce L. Melvin, "The Rural Neighborhood Concept," *Rural Sociology,* **19:** December, 1954, pp. 371-76.

Walter L. Slocum and Herman M. Case, "Are Neighborhoods Meaningful Social Groups," *Rural Sociology,* **18:** March, 1953, pp. 52-60.

	Residing inside neighborhoods (Per cent)	Residing outside neighborhoods (Per cent)
Intimate associates	47.8	28.0
Mass communication media	25.0	42.0
Institutionalized sources	30.1	32.2
Own experience	2.9	5.6

It is apparent that farmers living inside neighborhoods emphasized intimate associates as most valued sources more than nonneighborhood residents. This suggested difference in value placed on intimate associates as information sources may help explain differences in sources *actually used.* More persons living inside neighborhoods used other farmers as information sources than those living outside neighborhoods. Although variation among neighborhoods was considerable, outsiders made greater use of the institutionalized sources (i.e., county agents, vocational agriculture teachers, etc.). The median number of such sources used was lower in each of the five neighborhoods studied than for the aggregate of nonneighborhood residents. However, since the evidence cited is from five neighborhoods in a single Missouri community, findings must be regarded as tentative.

Neighborhood influences on farm practice adoption rates are also likely. Marsh and Coleman (63) found that the mean farm practice adoption scores (figured as a percentage of 21 applicable practices used) ranged from 25 to 57 in 13 neighborhoods in a single Kentucky county. Significant differences still remained when education, level of living, farm bureau membership, the value of farm products sold, and contact with professional advisers were successively held constant.

This led the authors to conclude "that the extent to which farmers adopt recommended practices is, in part, a function of the operator's neighborhood of residence" (63). It was reasoned that these differences may result from neighborhood pressure on individuals or the internalization of neighborhood standards as guiding principles.

Communities. It is within the organizational context of the community that most interpersonal patterns of communication occur. In one rural community over 75 per cent of all persons named as sources of farm information by persons living at the periphery were directed inward, compared with slightly less than 25 per cent directed outward (60). Hoffer (40) found that farm practice adoption rates were higher in communities favorable to change than in those that were not; also, that extension work was most effective when organizations in the community were used for educational purposes (39). Another study (5) showed that farm practice adoption rates were higher in communities that had community clubs than those that did not, and still another (15, 16) that farmers and wives who participated in community clubs adopted more improved farm and home practices than those who did not. Although some causal relationship is quite possible, the fact of association does not prove it.

Family

Numerous studies have shown that family members often serve as referents or consultants in decisions to adopt new farm and home practices (36, 51, 60, 80, 94). Also, children in school are frequently mentioned by parents as sources of farm information. Wives pass on what they read, hear, and see to their husbands, and often screen television shows and periodicals for information of likely interest to their husbands.

Family factors are also related to the adoption of farm and home practices. At least three studies have shown that the latter varies with stages in the family cycle (1, 30, 74). For example, women with small children in selected areas in New York had adopted more new home practices than had older women and those without children. This was also found to be true for women enrolling in and completing a sewing instruction course by television (100).

In a Wisconsin dairy area (94) farm practice adoption rates were decidedly higher where much labor outside of the family was used than where almost all of the work was done by members of the family. Chores done by the wife outside of the household were little related to adoption rates. However, an Indiana study (89) revealed that the stimulation that husbands received from their wives was highly important. The Wisconsin study (94) further showed that farmers who had one or more children in 4-H Club work and who shared with their wives favorable attitudes toward 4-H had adopted more improved farm practices than those who did not so qualify. This does not necessarily mean that one was the cause of the other. Farmers may have adopted more practices and enrolled children in 4-H Club work because of a third and unknown reason, although this is not known to be true.

Family values positively associated with the acceptance of innovations or improvements in farming were: (a) desire for high educational attainment of children and assignment of priority to this over expenditures for farming operations, (b) high value placed on social status and participation in formal social groups, and (c) high priority on the possession of improvements and conveniences in the home as a family goal (94). A high value placed upon owning a farm free of debt was negatively related to high farm and home practice adoption rates.

Social Cliques

Social cliques are composed of a small number of persons who accept each other as social equals and associate as close friends, largely to the exclusion of others near at hand. Basically they are nonkindred groups which, like neighborhoods, satisfy the need for intimate association with other people. Both are close-knit groups involving intimate face-to-face contact and mutual concern about the welfare of fellow members. While neighborhoods include people in a given locality as a basis of association and belonging, cliques are composed of people with similar interests and esteem quite apart from place of residence. Each has its own natural history. One may involve a group of farmers who like to go to sales together; another, rabbit farmers in an area where general farming prevails; or simply an aggregation of farmers that find mutual satisfaction in being in close association with each other.

As neighborhoods decline in number and vitality and as people are deprived of intimate association with others in the immediate locality, cliques serve something of a substitute function in supplying the need for intimate association with others. As interests of people become further differentiated and as status differences increase, it is possible that clique patterns of association may supplant neighborhoods.

Cliques, like neighborhoods, are important social structures in the diffusion of farm information since as social systems they involve both active and passive mechanisms of social control. On the passive side, cliques tend to orient social relationships. They provide a convenient definition of proper associates. At the same time norms of the clique specify attitudes of superiority and exclusiveness toward outsiders. Group members may be actively subjected to ridicule and expulsion for association with "the wrong people." Thus, cliques may be very important determining factors in patterns of association upon which interpersonal exchange of farm information is predicated.

Five situations involving social cliques in the quest for information on an interpersonal basis have been identified (53): (See also Figure 5, p. 77.)

(a) Situations where both the information seeker and the person sought are members of the same social clique;
(b) Situations where neither the seeker nor the person sought are members of any clique;
(c) Situations where the seeker is a member of a clique group, but the person sought is not;
(d) Situations where the person sought is a member of a clique group, but the seeker is not;
(e) Situations where the information seeker and the person sought are members of different cliques.

This series of situations might be regarded as something of a clique-resistance gradient ranging from situation (*a*), where facilitation of contacts might be expected, to situation (*e*), where the greatest resistance to cross-clique communi-

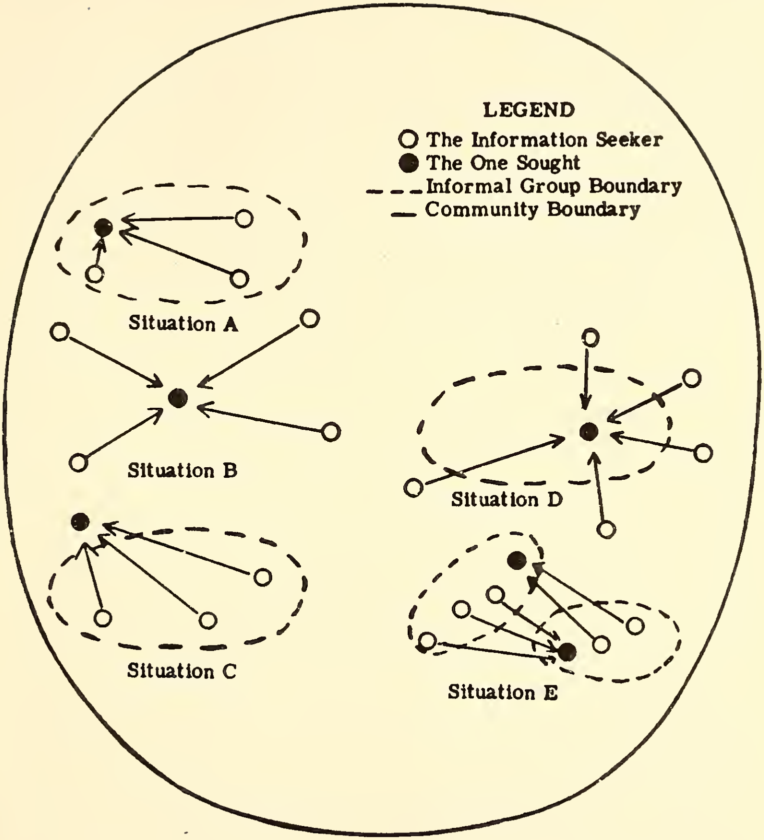

Fig. 5. Informal social groups and the interpersonal communication of farm information: a diagrammatic representation of possible situations.

Source: Lionberger, H. F., "The Relation of Informal Social Groups to the Diffusion of Farm Information in a Northeast Missouri Farm Community," *Rural Sociology,* **19** (September, 1954), p. 235.

cation would likely occur. In situation (*a*) the clique mechanisms should operate in favor of communication among members. Situation (*b*) should be neutral, providing neither facilitation nor adverse influence because no clique lines between communicator and communicatee are involved. Situations (*c*) through (*d*) involve varying combinations of group inclusiveness and exclusiveness, which may be expected to serve as barriers to communication.

Three interpersonal, information-seeking relationships (with persons marked as local influentials, personal sources, and most frequently sought sources) were used in a Missouri study (53) to test this gradient under circumstances where cliques were still in an amorphous state of development. In all three cases, situation (*a*) facilitated contacts, but only in the case of contacts with influentials (persons most frequently named as sources of farm information) was a complete resistance gradient in evidence. Differences were significant by usual statistical standards, but small. Under circumstances where clique lines are more rigidly drawn and where cliques are more active in excluding outsiders, differences might be much greater.

Clique association may also be associated with a high value placed upon the opinion of others in matters quite unrelated to the social reason for clique association. This was found to be true in the way fellow clique members viewed persons most valued as sources of farm information (53). When asked, "Whose opinion do you value most highly in matters related to farming?" farmers in a single Missouri community were much more inclined to name fellow social clique members than others.

Aside from matters of communication, cliques may be important determining factors in personal decisions. Loomis and Beegle found that decisions to participate or not to participate in a government-sponsored resettlement project were more dependent upon clique relations than any other factor. "The decision as to whether or not to leave the project was not made on the basis of cool, rational self-interest of individuals. Frustration was high, the decision to leave was made in the mental climate of the familistic Gemeinschaft. Many colonists who realized after leaving that they had forfeited the possibility of owning the nicest house and farm they could ever have, and who realized they had left the community which entitled them to excellent schools and other facilities, once away and alone, regretted leaving under the emotional stress of clique influence which required that the group manifest its dissatisfaction by moving away as a unit. They left as a result of confusion and frustration, which varied according to the leadership and nature of the cliques, or the 'grape vine' through which passed rumors of various types adverse to the Administration. Once away, they were no longer a part of the clique that rebelled at the changes in policies regarding the type of tenure by which the settlers would hold the land, the rates they would pay, and other controls and changes. Many wanted to come back."[3]

In some respects social cliques serve much the same function as neighborhoods in the dissemination of farm information. Both tend to increase the proportion of information-seeking relationships used where information seekers and persons sought are members of the same informal social group. In both, communication about matters related to farming is probably incidental to and an unplanned part of the social interaction that usually occurs. This is in contrast to formal group meetings where matters related to farming may be a planned part of the program.

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[3] Charles P. Loomis and J. Allan Beegle, *Rural Social Systems* (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1950), p. 140.

Reference Groups

A reference group is a group to which an individual refers when forming an opinion, making a judgment, or deciding to act. Actual membership is not a requirement. One may act in accordance with group norms in expectation of becoming a member, or merely because he identifies himself with a real or imagined social group. Also, there are such things as negative reference groups.[4] That is, a person may try not to become identified with a group, or if he is, to divest himself of this association. For example, a person may change his name to avoid identification with a particular nationality or otherwise act in a manner to prove to himself and others that he really does not belong. When asked whether he was a follower of Christ, Peter swore and said he was not. The influence that reference groups have on behavior and thinking is dependent upon the importance a person attaches to the group, the norms of the group as he perceives them, and his expectations regarding the group. Thus, within limits the same reference group may mean different things to different people.

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[4] Theodore M. Newcomb, *Social Psychology* (New York: The Dryden Press, 1950), p. 226.

Individuals may also serve as referents. A referent is a person whose expectations are considered in an individual's thoughts and actions. Studies of interpersonal patterns of communication and influence among farmers indicate that both individuals and groups serve as significant referents in the behavior of individual farmers. By the use of projective techniques, Rogers and Beal (80) were able to show more conclusively than previously that neighborhoods constituted one of the most important reference groups in farm practice adoption behavior, and that they were more important for late than for early adopters.

Also, in the same study, most of the farmers regarded the family as an important reference group. The county agent was perceived more as an "information-giver" than as an "influential." Other studies show that other farmers are most likely to be the decision clinchers (17, 23, 58, 79).

Mixed feelings were observed regarding the scientist as a referent (80). As may be expected, those with the highest adoption scores expressed the most favorable reactions. Generally speaking, the scientist was regarded as a distant referent who usually worked for a commercial concern. Impressions were, however, that farmers had more confidence in scientists working for the government or for public agencies than for those associated with commercial concerns.

With only 23 cases involved in a single Iowa community, findings from this study would have to be regarded as highly tentative in the absence of supporting evidence from other sources. Nevertheless, findings from related studies not specifically directed to reference groups and persons as such tend to substantiate the conclusions stated (17, 23, 59, 79).

Reference groups may exert an important influence even though they are amorphous and fleeting in nature. A series of experiments by Lewin (49) were directed to changing food habits of women not previously acquainted with each other. In the series about 10 times as many women changed food habits when exposed to group discussion and decision methods than when a straight lecture method was used. On the one hand, the leader carefully guided group discussion to a favorable decision regarding the proposed action, while on the other a skillful lecturer carefully presented facts about the proposed changes, appealing to such motives as money saving, health, and patriotism.

In the group discussion-decision situation, participants had an opportunity to consider the new proposals in terms of their own situation, and to talk with others who were in much the same situation as themselves. They talked about such things as what the husbands would say when they saw a cooked kidney on the table. Also, the joint decision seemed to provide a compulsion to conformity that was essentially absent when individuals arrived at decisions independently.

Formal Groups

These are the groups that elect officers, appoint committees, adopt a constitution, and plan programs. They are ordinarily organized for the promotion of special interests. Those organized for the express purpose of disseminating farm information are likely to contribute directly to that end. Others dedicated to more general objectives of marketing, rural life improvement, welfare, social activities, etc., may contribute indirectly.

All provide opportunities and places for meeting others who have similar interests and problems. Even though meetings may be called for special purposes, much of the conversation is directed to other ends. Witness, for example, conversation before and after church in a rural community.

Since formal groups are quite frequently selective of persons more competent than the average as farmers, they increase the availability of competent farmers to fellow group members. This is particularly true of groups of broad spatial orientation and those specifically directed to objectives related to farming. Those most active in formal social groups use more improved farm practices and are more exposed to a variety of direct sources of farm information.

A Missouri study shows that persons sought for advice in matters related to farming were more likely to have been exposed to formal group influence than those who sought their advice (60). When communication channels are so structured, persons chosen as sources and consultants are in a position to pass on what they see and hear to those who are less exposed than themselves to group and other channels.

Formal groups, like their informal counterparts, provide some compulsion to act in accord with group expectations. To the extent that norms conducive to rational inquiry and change in farming are accepted as group norms and are internalized individually, group influence on members will likely be conducive to change. Being selective of persons who are inclined to the adoption of new farm practices, formal groups provide a favorable climate for meeting and talking to other competent farmers, who commonly are strongly influential in the decisions either to change or not to change farm practices. It is then certainly not surprising to find significant positive correlations between participation in formal social groups and the adoption of new farm practices (60, 92).

Status Factors

Whenever people associate over extended periods of time, they rate each other on the basis of things considered important. The evaluation may be on what they say and do (in terms of local expectations), or on whether they possess generally valued attributes and characteristics. Thus high income, ownership of a big farm, and high educational attainment may be prized possessions. Other things being equal, those who possess them singly or in combinations are regarded as being "better situated" than those who do not. In a sense, persons are placed in a high-low hierarchy on the basis of what they have or don't have, or on the basis of how much they have of what is considered valuable. The position assigned is referred to as social status, and the factors upon which social position is assigned as status factors.

People in farming communities have a way of combining farm ownership, education, neighborliness, respectability, etc., in their own special way to rate the people they know on a high to low continuum. This they do regularly, and with a high degree of agreement.[5] Some are placed high on the scale, and may be referred to as "fine" or "the best people," while those who are regarded as "not amounting to much" are rated low.[6] Others are readily rated on a continuum in between, and may be referred to in such terms as "ordinary" or "good, hard-working, respectable people." The relative position to which a person is assigned on this continuum is here referred to as community prestige, or simply prestige. If people think and act as if they regard themselves as distinctly different from people at higher or lower positions on the prestige hierarchy, social classes exist.

The way people rate each other on a social status or prestige hierarchy is important to the communication of information and the exercise of personal influence, because such differences may set limits on the kind of persons who are sought for information by given individuals. Katz and Lazarsfeld (45) found that personal influence and communication about a wide variety of matters was generally confined to people of about the same status level. Marsh and Coleman (64, 20) found that people tended to look up the competence scale in neighborhoods where the general level of farm practice adoption was high, but sought persons of about the same

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[5] Harold Kaufman, *Prestige Classes in a New York Community* (Ithaca: New York Agricultural Experiment Station Memoir 260, March, 1944).

Otis Dudley Duncan and J. W. Artis, *Social Stratification in a Pennsylvania Rural Community—with Special Reference to Social Participation* (University Park: Pennsylvania Agricultural Experiment Station Bulletin 543, October, 1951).

Milton C. Coughenour, *Social Stratification in a Northeast Missouri Farming Community* (unpublished Ph. D. dissertation, University of Missouri, July, 1953).

[6] James West, *Plainville, U.S.A.* (New York: Columbia University Press, 1945), p. 117.

competence as themselves where levels were generally low. Differences in norms relative to the adoption of new developments in farming was suggested as the causal factor.

In a Missouri study (60), farmers were generally inclined to look up the status scale for advice on matters related to farming. This was found to be true irrespective of whether the measure of status was income, years schooling, size of farm, technological competence as a farmer, or community prestige. (See Figures 6 and 7.) Also, the higher the status of the information seeker, the more selective he was in the choice of others as sources of farm information.

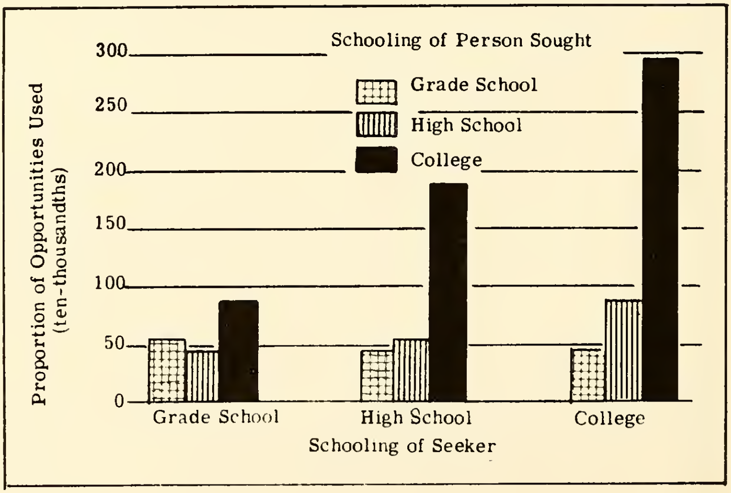

Fig. 6—Proportionate use of persons with grade, high school, and college training as sources of farm information by seekers with grade, high school, and college training.

Source: Lionberger, H. F., and Coughenour, C. M., *Social Structure and Diffusion of Farm Information.* Columbia: Missouri Agricultural Experiment Station Research Bulletin 631, (April, 1957), p. 68.

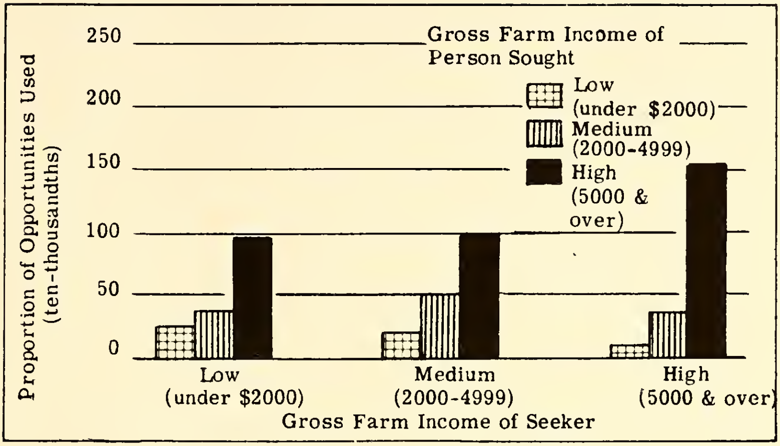

Fig. 7—Proportionate use of low, medium, and high income persons as sources of farm information by low, medium, and high income seekers. Source: Lionberger, H. F., and Coughenour, C. M., *Social Structure and Diffusion of Farm Information*. Columbia: Missouri Agricultural Experiment Station Research Bulletin 631, (April, 1957), p. 59.

The possibility that status differences may serve as deterrents to communication should not be overlooked. If social distances attendant to status differences are sufficiently great, communication on a person-to-person basis may be slowed down or stopped. This is likely to happen where class lines are clearly drawn and where association tends to be confined within class lines. Even in the absence of clear-cut class lines the tendency to choose persons higher on the status scale than one's self may become progressively less as distance between the seeker and the person sought increases (59).

With respect to the effect of status differences in matters of communication and influence, an important question is how the information seeker ranks the specific status characteristics of the person chosen for consultation and advice. By use of T-coefficients of association in a Missouri study (60), it was possible to rate the relative importance of status factors in the choices made. In choosing other persons as sources of farm information, farmers first of all looked for persons with the requisite knowledge and experience to give advice. Next in order, but of considerably less importance, was participation in organizations which involved people outside the immediate locality. Gross farm income and community prestige rated third and fourth in importance. Although size of farm operated, tenure status, localistic social participation (participation in formal social groups), years schooling completed, and total participation in formal groups were all significantly related to choice of persons as sources at the .001 level, they were of much less importance than the other three factors considered.

When farmers were asked to whom they *talked most frequently* regarding matters related to farming, the rank order of importance of factors in choices made were extra-localistic social participation (participation in formal groups drawing membership from an area larger than the immediate locality), improved farm practice ratings, farm income, and community prestige (60). All the other factors considered were again significantly related at the .01 level of significance or above. When contacts with key communicators alone were considered, technological competence and extra-localistic social participation again took the number 1 and 2 positions, with total social participation in formal groups also highly related. Other factors were of considerably less importance, although of significant consequence. It thus appears that the choice of persons of influence as sources of farm information may be made on a somewhat different basis than choice of persons as sources in general. However, in all relations examined, competence as a farmer and broad social orientation were the two most important factors involved in choosing others as sources of farm information.

So long as persons sought for advice are more competent to give advice than those who seek it, the net effect of interpersonal communication in matters regarding farming should be to raise the knowledge level of those who seek information from others. This is particularly true where those most sought as sources are also more exposed to direct or originating sources of farm information. It should be understood, however, that this is not always the case. It has already been seen that there is some evidence to indicate that the lower the level of this competence, the less critical farmers become in their selection of other persons with whom to converse on matters related to farming (20, 60, 64). Under such circumstances the likely net result of interpersonal communication and influence will be to perpetuate locally existing levels of competence as a farmer.

7. Cultural Factors in Diffusion

Culture and Its Influence

Culture is the total man-made part of man's environment. The parts that are material in nature are tangible and readily discerned. Figuratively speaking, they can be picked up and examined. The nonmaterial aspects, on the other hand, are not always readily detected, examined, and understood. They include such things as ideas of right and wrong, attitudes toward and importance ratings of people, places, and things. They are often so much a part of a people that they are not detected, let alone understood.

The ideas and beliefs of man and the material things he has to work with set limits on what he can do at a given time and place, and very often on how it may be done. They provide ready-made answers to many of the recurrent problems of life. Behavior is often so distinctly modeled in accord with a cultural pattern that action without thought and deliberation is literally possible. The choice of words and the way we put them together are examples, as are the many daily routines performed without deliberation.

Although the basic needs of man may be essentially innate and physiological in nature, the things that he strives for most are the goals that he formulates as a participant member of society. Sometimes these man-made goals are regarded as more important than life itself. Culture is also a partial determinant of what will be perceived and how. As an example, the size, composition, and shape of the earth has not changed much in three thousand years, but man's perception of it has. When it was thought that the earth was flat, most things directly or indirectly related to its shape were perceived in a manner consistent with that belief. During the mid-1800's many people died moving across better land than they found on the Pacific coast mainly because they thought that treeless land was no good for farming. Although it has often been held with some truth that farmers in America originally settled in villages for protective reasons, probably the main reason was the tradition of village settlement in the lands from whence they came. Even in novel situations people act in terms of past knowledge and experience. Adherence to tradition in farming is apparent in the persistent use of antiquated farm practices when better ones are available, and in the persistence of one type of farming in an area where another is better suited.

Perhaps the influence of cultural factors in farming stands out in clearest perspective when the behaviors of people with different cultural backgrounds are compared. In a study of the adoption of farm practices in Wisconsin (73), it was found that Danish farmers had adopted many more improved dairy practices than Polish farmers. Examination of the philosophy and practice that prevailed in the countries from whence they came provided likely explanations of the differences found. The Danish farmers had been accustomed to dairy farming in their own country. They had a healthy respect for intellectual pursuits and freedom of choice for individuals. Polish farmers, having been accustomed to oppressive restrictions and economic deprivation in their home-land, placed a high premium on security and primary group conformity. Sons were expected to farm as their fathers did, and not to make decisions independent of them. Owning a farm free of debt was a symbol of security highly cherished by old and young alike. All members of the family were expected to work to that end. Deviation from proved and accepted ways of farming was regarded as a threat to this central objective that could not be tolerated. It was thus apparent that many desirable changes in farming had been rejected on grounds other than sound management. Another very good example of how cultural factors can influence farm operations and practices is the behavior of Amish farmers who are denied the use of telephones, automobiles, tractors for some purposes, and electricity in the home because of religious convictions. By looking at extremes such as these it is easy to see how the culture of a people can be an important conditioning factor in accepting changes in farming.

✓ (The more isolated a people in terms of communicative exposure or contact with the outside world, the more resistant to change they are likely to be.) This seems to apply to both areas and to people. Where people have had almost no contact with the outside world, life may remain much the same for centuries. However, when contacts are many and varied, changes seem to occur at an increasing rate. Studies of the adoption of farm practices have repeatedly shown that exposure to many and varied sources of farm information and influence is associated with high rates of adoption (3, 37, 51, 91).

(Values may be regarded as importance ratings which people attach to things, conditions, and circumstances.) They may also be regarded as goal objects to which people orient their thinking, actions, and feelings. As such, they become important organizing themes in the behavior of individuals. Attitudes, on the other hand, may be thought of as predispositions to act, perceive, think, and feel in relation to something.[1]

Research in farm practice adoption has not generally made a clear-cut distinction between values and attitudes, and results are generally inconclusive. Family values found to be positively related to farm practice adoption rates are a desire by farm operators and their wives for a high school or college education for their children, and precedence of education for children over work or expenditures for the farm (94). Emphasis on owning a farm free of debt has been generally found to be negatively associated with the adoption of improved farm practices (36, 94). Since high income and good farm management are instrumental in the acquisition of conveniences in the home, a high value placed on such things is usually, although not always, associated with above average adoption rates. One study of goal orientations showed that even though making money was the most important consideration in the adoption of new farm practices, noneconomic reasons were most salient in some decisions and for some people; also, that the economic factor tended to be discounted where immediate economic advantage was not readily apparent (97).

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[1] Theodore M. Newcomb, *Social Psychology* (New York: The Dryden Press, 1950), p. 119.

In a Michigan study (41, 42) of values related to the adoption of four improved corn-growing practices, it was found that farmers who identified themselves with efficiency and self-reliance models presented to them by the researchers were much more likely to have adopted each of the four practices considered than those who did not. On the other hand, those who identified themselves with models emphasizing security and conservatism in farming were much less likely to have accepted each of these practices than those who did not identify themselves in this manner.

However, in a carefully conceived and executed study (75) of values related to the adoption of improved dairy practices and to knowledge, critical evaluation, and use of agricultural lime, associations between adoption rates and twelve values scaled according to the Guttman technique were very small.

In accord with findings of a Wisconsin study (4), the New York study (75) showed that adoption was negatively but significantly associated with high emphasis on security and traditionalism. Three value orientations were found to be positively related to knowledge, critical evaluation, and use of lime practices. These were emphasis on material achievement, science, and material comfort. Again a desire for security and emphasis upon traditionalism was negatively related to adoption. Nevertheless, all correlations were low. The multiple correlation of tradition and security values with the practice adoption scale was only .23. This means that only about 5 per cent of the variation was explained. When individualism and belief in science were included, this figure was increased by only 2 per cent. Four of the most highly correlated value variables explained only about 10 per cent of the total variation in the lime scale. These were belief in science, material comfort, security, and tradition. Perhaps, as the author suggests, correlations would have been higher if these values had been viewed in specific relation to the adoption of farm practices rather than in the generalized manner in which they were considered.

Perhaps most of all this study emphasizes the importance of detecting values that do operate in a significant manner in the adoption of farm practices, and of measuring them under circumstances where variations are greater.

8. Personal Factors in Diffusion

Why some people adopt new ideas and practices more quickly than others relates in part to the individual himself. Individual or personal factors include age, years schooling completed, and such selected psychological characteristics as mental flexibility and orientation toward farming as a business. Since studies relating to age and schooling as a factor in farm practice adoption rates are so numerous, only a few selected ones are cited to support the generalizations made.

Age

Elderly farmers seem to be somewhat less inclined to adopt new farm practices than younger ones (23, 34, 36, 54, 65, 92, 99). Some studies show highest adoption at middle age (99). Young farmers who may desire to make changes in farming are not always in a position to do so because of capital restrictions or because final decisions may rest with the moneylender or with the person who owns the farm. Although some evidence indicates that older farmers are less receptive to change than younger ones, failure to adopt new practices does not necessarily mean that they are not receptive to change for somebody else. Very practical considerations of health, declining energies, and pending retirement may dictate actions not in accord with maximization of income and profit (50). Obviously, elderly farmers have different problems than middle-aged and younger ones. Although elderly people appear less receptive to new ideas and change than younger ones, Wilson and Gallup (99) conclude after a series of studies that they are not enough less receptive to preclude effective extension programming directed to their special needs.

Education

While generally sharing the basic belief that education can cure most ills of society, farmers have not always felt that schooling beyond the eighth grade is needed for farming. One view is that too much schooling is useless or even detrimental because it makes a person impractical. On the other hand, schooling has been valued as a means of increasing knowledge about new farm technology. The assumption is that schooling facilitates learning, which in turn is presumed to instill a favorable attitude toward the use of improved farm practices. Be that as it may, the relationship between years of schooling and farm practice adoption rates is likely to be indirect, except in cases where persons learn specifically about new practices in school. Where this is not the case, education may merely create a supposedly favorable mental atmosphere for the acceptance of new practices. Since favorable orientations may be gained outside the schoolroom, correlation between years completed and adoption of farm practices is not always high. Nevertheless, more than eight years schooling is almost always associated with higher adoption rates than lesser amounts (23, 54, 60, 65, 92). Here, as with other variables associated with the adoption of farm practices, clear-cut relationships are hard to establish because years of schooling is related to other factors likely to condition adoption rates, as, for example, income and age of the farm operator (22, 24, 60).

Psychological Characteristics

A number of personal characteristics related to adoption rates have been considered. These include rationality, mental flexibility, dogmatism, orientation toward farming, and innovation-proneness.

When rationality is defined in terms of maximizing profits in farming, it may operate as an intervening variable between contacts with educational agencies, and the adoption of new farm practices (25). In other words, exposure to reliable sources of farm information may create a state of rationality which in turn predisposes an individual to the adoption of new practices.

All people are to some degree "set in their ways" and, to a degree, incapable of perceiving pertinent relationships in new situations, of analyzing them in terms of adjustment alternatives, and of making satisfactory adjustments to them. Nevertheless, people vary greatly in this respect. The farmer who is inclined to mental rigidity tends to resort to the traditional formula of hard work, persistence, and thrift in matters of farm management. A mentally flexible person, on the other hand, is capable of perceiving significant elements in novel situations, of dealing with them mentally, and of making adjustments to them. The latter would most certainly be associated with high adoption rates. This was found to be the case among beef cattle farmers in a Kansas county (24), and among a selected sample of farmers in Ohio (76). In the Kansas study (24), professional orientation toward farming was associated with high adoption rates. This quality was defined in terms of contacts with the county agent, attendance at Feeder's Day conferences, favorability toward the College of Agriculture and the Extension Service, and willingness to try new farm practices before trial by neighbors. Also, studies regarding propensity to change indicate that some people are more prone to change than others (76).

9. Situational Factors in Diffusion

Reasons why farmers adopt farm practices more quickly at one time than another relate to the situation in which they find themselves when alternative courses of action become known. Although situational factors are many and varied, only a few have been the subject of research. Among those considered in this section are farm income, size of farm, tenure status, community prestige, sources of farm information used, level of living, and the complexity of the practice or change involved. A final sub-section is devoted to the interactional association of situational and selected other factors considered in previous sections.

Farm Income

High farm income nearly always is associated with high farm practice adoption levels (23, 31, 60, 66, 92, 94, 99). A reciprocal cause-and-effect relationship is likely. Alertness to change and quick adoption of new farm practices suited to prevailing farming conditions leads to higher incomes. This in turn makes more capital available for the adoption of new practices. However, the fact that low income farmers are slow to adopt practices that they could well afford suggests that factors other than income are operative.

Size of Farm

Size of farm is nearly always positively related to the adoption of new farm practices (23, 31, 60, 66, 92, 99). Many new technological advances require large-scale operations and substantial economic resources for their use. Also, use of improved farm practices produces economic benefits which permit expansion of farming operations, which in turn makes it economically possible to use more improved farm practices. Unpublished data from a Missouri study reveal that the greatest differences in farm practice adoption levels occurred between operators of relatively small farms (less than 140 acres) and those operating middle-sized and larger ones. A critical minimum size of about 140 acres for the adoption of the farm practices considered was therefore suggested. Perhaps a minimum size of farming operation necessary for successful adoption can be specified for most farm practices and for most areas.

Tenure Status

It is well known that farm owners have more complete control over farming operations than tenants. Owners can make decisions to adopt new practices, but tenants must often obtain the concurrence of the owner before trial or use. This is particularly true where some financial backing by the owner is required. Consequently, adoption rates are usually higher for farm owners than for those who rent their farms (23, 51, 60, 92, 99). However, differences between owners and renters are likely to vary greatly regionally due to differences in tenancy arrangements and freedom accorded the renter to make decisions. In the cotton South the renter is likely to have little to say about changes made in farming operations. Quite the opposite may be true in the corn-hog-beef country of the north central states, where the operator is more likely to inherit the farm, and where it is customary to accord considerable freedom of decision to the renter.

Community Prestige

Community prestige is a status factor, but the relationship it bears to the adoption of farm practices is also situational in nature. Where alertness to new developments in farming and quick successful acceptance is a status factor, a person's standing in the community (community prestige) is almost certain to be positively related to the adoption of new farm practices (59). Under such circumstances, farmers with high social standing are expected to constantly remain well informed regarding new developments in farming. Those with low prestige may properly look to the improvement of farming operations as a means of climbing the social ladder.

It should be recognized that there are likely to be situations where quick adoption of new farm practices does not contribute to high prestige in a community. Under such circumstances, the negative correlation between rapid adoption and high prestige may be expected.

Sources of Farm Information Used

Irrespective of causal relationships and of the conditions or circumstances that intervene between exposure to new ideas and the active use of them, number of sources used or contacts with information sources is positively related to adoption rates (37, 51). The relationship is even more marked when comparisons are made between adoption rates and use of particular kinds of sources. A high positive correlation is particularly evident with the use of such sources as the county agent, the college of agriculture, and vocational agriculture teachers (23, 37, 55, 60, 92). On the other hand, high dependence on relatives and friends as sources of information is usually negatively associated with the adoption of new farm practices (62, 92). Too often, reliance on relatives and friends to the exclusion of others more successful as farmers perpetuates a relatively low level of knowledge regarding the technology of farming (63).

Level of Living

Since successful farm practice adoption is instrumental in providing the means for supporting a higher level of living, a positive correlation between the two would be expected and is generally found (23, 31, 92, 94). Also, studies which relate measures of socio-economic status to the adoption of new farm practices have found the same typical relationship (60, 65). This again is to be expected, since such measures are usually heavily weighted with level-of-living items.

A Wisconsin study (94) indicated that the adoption of health practices was only slightly associated with the adoption of farm practices. This led the author to conclude that the adoption of preventive health measures for family members is not subject to the same influence as the adoption of improved farm practices.

The Nature of the Practice

The speed with which adoption will take place is partly dependent upon the nature of the practice itself (90). Generally speaking, the more complex a practice, and the more change it requires in existing operations, the more slowly it will be adopted. A committee of rural sociologists has classified practices in terms of their complexity, which roughly represents the speed with which acceptance may be expected to occur. The gradient is as follows:

(1) Change in materials and equipment only, without a change in techniques or operations (e.g., new variety of seed);
(2) Change in existing operations with or without a change in materials or equipment (e.g., change in rotation of crops);
(3) Change involving new techniques or operations (e.g., contour cropping);
(4) Change in total enterprise (e.g., from crop to livestock farming) (87).

Although it cannot be said with certainty, the following additional generalizations seem likely to apply to farm practice adoption rates:

1. Practices involving large capital outlay will be adopted more slowly than those requiring small amounts of capital.
2. The more compatible a practice with existing farming operations, the more likely it will be adopted quickly.
3. Traits or practices readily communicated by conventional methods used by farmers will be adopted more readily than those that are not.
4. The more difficult it is to retract a decision and the subsequent consequences, the slower adoption is likely to be.
5. Costly and complex practices that can be taken a little at a time will likely be adopted more quickly than where this is not possible.

Interactional Association of Factors

Obviously many of the factors considered in the past sections are not independently related to the adoption of farm practices. The manner in which they combine is illustrated by the interrelationship of years of schooling, income, and age of the farm operator. When the influence of age and income are held constant, the correlation between years of schooling completed and farm practice adoption levels is materially lowered (38, 60).

Another significant consideration about factors related to the adoption of farm practices is the manner in which special combinations of factors operate. The special significance of such combinations may be determined by the use of analysis of variance techniques (22, 24, 31, 60, 92). In a North Carolina study (92) where age, level of living, favorability toward institutionalized agencies of farm information, tenure status, and amount of crop land were jointly considered, two combinations were found to be helpful in explaining variation in farm practice adoption rates. These involved a combination of age and favorability toward institutionalized agencies of information and between tenure status and favorability toward institutionalized agencies. A similar type of analysis involving age, years of schooling completed, farm income, and total social participation scores in a Missouri study (60) revealed a significant joint effect of age and income. For gross farm incomes under $3,000, age and improved farm practice scores were negatively related, while the opposite was true for farmers with income in excess of $3,000.

A significant observation from the multiple analysis of factors associated with farm practice adoption scores is that investigators have been able to explain only a small part of the variation in adoption rates by factors conventionally considered. For example, Copp (24) was able to explain only about 50 per cent of the variation in adoption scores among a sample of beef cattle farmers in Kansas by formal education, age, social participation, and gross farm income, and by a professional farming and a mental flexibility score. This suggests the need for including more factors and better measurement of those considered.

10. Research Achievements and Limitations

Major Achievements

Major research achievements of the studies considered include (a) introduction and use of the stage concept of diffusion, (b) definition and description of the adoption pattern, (c) definition of the role and function of change agents, information sources, and media in adoption, and (d) introduction and use of sociometric methods in the study of interpersonal patterns of communication and influence.

Introduction and use of the stage concept has extended possibilities for defining the role of information sources and events in the sequence of influences which cause individuals to adopt new ideas or practices (9, 87). Whereas the value of a source was once sought in terms of its ability to bring about adoptions in new farm practices,[1] it is now assessed in terms of its usefulness as a notifying, interest-creating, informing, legitimating, and/or reinforcing agent (7, 23, 95).

Defining the adoption pattern and its tendency toward normalcy has opened avenues for research and permitted generalizations not otherwise possible (7, 21, 72, 87). Adopters may now be classified in terms of standard units for comparative purposes, and stages in the adoption sequence can be more clearly defined (78). Special characteristics of persons specifically located in the adoption sequence can be analyzed and influences likely to be effective in causing them to change may be detected (8, 87). Rough predictions regarding the relative speed with which adoptions are likely at early, late, and intervening stages are possible. Further research into the nature of the adoption sequence under variant conditions will no doubt make refinements possible (26).

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[1] Clarence Beaman Smith and M. C. Wilson, *Agricultural Extension System* (New York: John Wiley & Sons, Inc., 1930).

Definitive division of time sequences in the rate of adoption has facilitated observation of the process and conditions of change (23). Presently, there seems to be a point early in the adoption sequence when the major educational problem ceases to be one of showing the practice to be legitimate and useful and becomes one of making the new idea or practice, with its essential features, known (72). There also may be a point beyond which no educational effort is necessary, and very likely one when reinforcement should be a primary consideration.

Studies directed to the role of information sources, media, and special functionaries in diffusion stand as a general type of research deserving of special mention. Although research regarding the role of such change agents as the county agent,[2] the subject matter specialist,[3] and dealers (10) has not generally been directed to their respective roles as implementers of change, it has contributed to a general understanding of role performance in this respect. The studies of the role of special functionaries (e.g., innovators, key communicators, and influentials) and information sources and/or media (29, 52, 64, 93) have been more closely directed to role performance in the processes of change. They have therefore made an important contribution to an understanding of the roles performed singly or in combination in the individual adoption process. Insights have been provided that should permit effective, planned change in conventional functions performed.

By application of pseudo-sociometric techniques to the study of interpersonal relations, it has been possible to determine how social groups and status factors structure interpersonal patterns of communication and influence, to locate people who are sufficiently distinctive in the performance of functions involved in the diffusion of farm practices to be treated as special functionaries, and to determine their distinctive characteristics. Those distinguished include persons who are instrumental in introducing new ideas and practices locally, those especially involved in the communication of information, and those distinctly influential in final decisions to accept new ideas or practices (29, 39, 52, 64, 77, 93). Definition of their special characteristics and related functions has opened the way for educational planning specifically directed to persons who perform rather well-de-

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[2] Eugene A. Wilkening, *The County Agent in Wisconsin: Perceptions of Role Definitions as Viewed by Agents* (Madison: Wisconsin Agricultural Experiment Station Research Bulletin 203, September, 1957).

Jack Preiss, *A Theory of Control: The Role of the County Agricultural Agent* (unpublished Ph.D. dissertation, Michigan State University, September, 1954).

[3] Emory J. Brown and Albert Deekens, "Roles of the Extension Subject Matter Specialist," *Rural Sociology,* 23: September, 1958.

fined functions in the diffusion process. It is also possible to examine the manner in which status differences condition interpersonal patterns of communication and influence (59, 60) and to test such formulations as the two-step communication theory, which holds that people more exposed to the mass media pass on what they learn to those who are less exposed (45).

In trying to evaluate complex educational programs under experimental conditions, investigators are often plagued with indirect influences operating between experimental and control groups. Examination of interpersonal influences and communication between the two groups with respect to pertinent changes made in the control group provides a means of assessing this leakage. It is also possible to measure the extent of outward dissemination of ideas or practices from focal centers of influence, as Blackmore, Dimit, and Baum did in their study of the diffusion of farm practices from test demonstration farmers (14).

Deficiencies and Needed Research

More standardization of method and procedure is needed for maximum comparability of results. The same is true for concepts and conceptual schemes used. In support thereof, one need only witness the variety of names applied to persons frequently named as sources of information (29, 39, 52, 64, 77, 93). However, when uniformities in procedure and design have been attained, differences in research findings requiring explanation will still occur. Unless a more fundamental basis of explanation is devised than is now in use, we shall probably continue to talk of differences in findings in terms of geographic regions or civil subdivisions, which, of course, tell us almost nothing about the reasons why the differences exist. Possibly an appropriate basis for explanation could be found in the value systems of the people, particularly those relating to change. Definition of values pertinent to the acceptance of change and the configurations in which they occur, much as Gregory has done with cultural and social characteristics in his delineation of social areas, is needed.[4]

More research under experimental conditions is needed to test hypotheses derived from "after the fact studies," which have been the type most in evidence. However, care must be exercised not to violate essential research requirements for such designs. In general, experiments are likely to be more useful in testing specific techniques or conditions of learning for short-run purposes than for testing the effectiveness of complex educational programs of long duration as, for example, the farm and home unit approach to extension teaching. If anything very useful regarding educational method is to be learned by testing complex programs, it will be by close observation of process in relation to the achievement of specific objectives. Merely to learn that people exposed to a broad scale educational program have bigger farms, larger incomes, and have adopted more farm practices at the end of a designated time than those in the control group doesn't tell very much about how they got that way. The how, of course, is the important consideration insofar as educational method is concerned.

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[4] C. L. Gregory, *Rural Social Areas in Missouri* (*An Analysis of the Social Structures*), (Columbia: Missouri Agricultural Experiment Station Research Bulletin 665, April, 1958).

Study of change in process is recommended. Kaufman, Alexander, and Aurbach[5] suggest that careful observation of process and operation of educational influences in relation to specific changes may be a more satisfactory way of assessing the significance of change factors than the use of experimental designs involving control groups. By so doing, it is possible to readily detect changes when they occur and to follow up quickly to determine operative influences and the manner in which they operate (48).

Greater use of social theory is needed. The theories of Parsons, Smelser, Merton, and others have proved useful in the study of values, interpersonal relations, and decision making (60, 75, 97) . In view of the general state of development of theory in the social sciences, particularly in sociology, it is likely that the so-called "middle range" theories will be most useful for the present. Certainly, however, more attention must be given to theory formation and testing in research related to the diffusion and use of farm information.

Motivation or "why" research has been neglected by rural sociologists. This is probably due to (a) a feeling on the part of many that they are not well enough qualified to use the techniques required to pry into the innerworkings of the human mind, (b) a feeling of skepticism regarding the validity of research findings obtained by the use of projective techniques, and (c) a fear of how farmers might react to some of the techniques used. Nevertheless, some rural sociologists have been sufficiently well trained in the requisite methods to use projective techniques. Others can acquire the necessary skills, and the assistance of competent psychologists can always be sought. Also, it has been demonstrated that projective techniques can be successfully used to interview farmers (38, 43, 80).

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[5] Harold F. Kaufman, Frank D. Alexander, and Herbert A. Aurbach, "A Case Study in Research Interpretation," *Rural Sociology,* 22: June, 1957, pp. 156-59.

More attention needs to be directed to the influence of values on the acceptance of new ideas and farm practices. Values likely to be pertinent should be detected, measured, and their influence assessed with reference to specific types of change. It is also necessary to know in what significant combinations values occur and within what social and geographic limits. General approaches to the measurement of values which offer promise include direct questioning and rating regarding things considered important, content analysis of carefully conducted projective interviews, and disguised direct questioning. Straus suggests the use of disguised direct questioning involving the use of forced choices.[6]

Decision making should be studied. The recent interest of rural sociologists in decision making (4, 7, 47, 70, 96, 97) should be followed by exploratory and empirical studies directed to a clearer conceptualization of what constitutes a decision, how it may be functionally classified, and the conditions and processes involved in making it. Although it may be possible to test hypotheses regarding processes and conditions of learning in hypothetical situations requiring high level abstractions[7] (44), examination of same within the context of recently made decisions may be less hazardous (7, 25, 46, 58, 97, 98). Fewer assumptions regarding insight, situation, and transferability to actual situations are involved. Decisions which are a matter of record naturally permit more precise examination and analysis than those that are not.

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[6] Murray A. Straus, *Direct, Indirect, and Disguised Measurement in Rural Sociology* (Pullman: Washington Agricultural Experiment Station Technical Bulletin 26, August, 1957).

Complex changes have been neglected. Most of the research to date has been directed to the adoption of farm practices. Changes or adjustments in enterprises should also be considered. Knowledge of factors and conditions of such changes is very important in an economy where adjustment in farming operations is necessary for individual survival and economic balance. The reasons for failing to adjust should also be considered.

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[7] Charles F. Sarle, "Research on the Dynamics of the Farm Managerial Decision Process," *Journal of Farm Economics,* **38:** February, 1956, pp. 158-70.

The following articles appearing in the proceedings issue of the *Journal of Farm Economics,* **37:** December, 1955, all relate to "Progress and Problems in Decision Making Studies with Reference to the North Central Farm Management Research Committee's Interstate Managerial Study":

Harald R. Jensen, "The Nature of the Study," pp. 1097-1101.

Cecil B. Haver, "The Universe of Farms Studied," pp. 1102-4.

Joel Smith, "Some Problems of Method in the Interstate Managerial Survey," pp. 1105-9.

Glenn L. Johnson, "The Friedman-Savage Utility Hypothesis in the Interstate Managerial Study," pp. 1110-14.

D. Woods Thomas, "Sociological Aspects of the Decision Making Process," pp. 1115-18.

Lowell S. Hardin, "Possible Implications of Decision Making Studies for Farm Management Teaching and Research," pp. 1119-21.

Earl O. Heady, "Possible Implications of the North Central Interstate Managerial Study for Farm and Home Development Programs," pp. 1122-25.

Several academic disciplines are needed. The conditions of understanding human behavior, including the adoption of farm practices and adjustments in farming operations, are such that the knowledge and skill of several disciplines are required; particularly sociology, social psychology, economics, and anthropology. More cooperation among these disciplines for the kind of research described in this document is needed.

Part III

Bibliographies:

A. Of Research Sources—an annotated listing of the sources cited in Part II of this book.
B. Of Related Studies—a listing of studies peripheral to this analysis but pertinent to the study of diffusion.
C. Of General References—a listing of materials related to basic ideas and concepts regarding the phenomenon of change.

A. Bibliography of Research Sources

1. Abell, H. "The Differential Adoption of Homemaking Practices in Four Rural Areas of New York State," unpublished Ph.D. dissertation, Cornell University, 1951.

Homemaking practices adopted were viewed in relation to position in the family cycle. Families with children tended to have higher adoption scores than those without.

2. Abell, H. C. *The Exchange of Farming Information.* Ottawa: Canada Department of Agriculture, (August, 1953).

A pioneer attempt applying scaling techniques to uses made of farm information sources. Information source use is compared to selected characteristics of the farm and farm operator.

3. Alers-Montalvo, M. "Cultural Change in a Costa Rican Village," *Human Organization,* **15** (Winter, 1957), pp. 2-7.

The general conclusion was that the existence of three basic conditions would insure the acceptance of an idea by a group. These were felt need, compatibility of the item with the existing culture, and local proof of utility of the item. In addition to substantive findings, the study is useful for the conceptualization of influences operating in farm practice acceptance.

4. Alexander, F. D. "Studying the Decision-Making Process," *The Research Clinic on Decision Making.* Pullman: State College of Washington, (August, 1958), pp. 21-35.

Stages or steps in the decision-making process were discovered, but the farm and home program had done little to teach these rational steps. Of the various decision types considered, decisions involving husband and wife were most common. Decisions in which the husband was dominant rated second.

5. Bailey, W. C., and others. *Community Structure and Farmer Education.* State College: Mississippi Agricultural Experiment Station Sociology and Rural Life Series 8, (January, 1957).

Previous history of club participation in community clubs was an important determining factor in their effectiveness as instruments in bringing about changes in farm practices. The presence of community clubs in general was associated with high levels of farm practice adoption.

6. Beal, G. M. "How Farmers Accept A New Practice, 2,4-D: Sources of Information Analyzed by Time," Paper given at Midwest Sociological Society meeting, (April, 1956).

The time required and farmers' ability to recognize stages in the adoption process are demonstrated by the use of empirical data from the study of adoption of 2,4-D.

7. Beal, G. M. "Information Sources in the Decision-Making Process," *The Research Clinic on Decision Making.* Pullman: State College of Washington, (August, 1958), pp. 36-51.

This paper studies the adoption of new man-made fibers in a five-stage adoption framework. Definitive testing of source use by stages in the adoption process and demonstration of the feasibility of using a five-stage adoption framework were involved.

8. Beal, G. M. "Information Sources in the Decision-Making Process: Stages of Adoption Analyzed by Adopter Categories," paper read at seminar of the Foundation for Research on Human Behavior on "Adoption of New Products: The Influence of Individuals and Groups," (November and December, 1958).

Findings from two Iowa studies regarding sources of information used in the adoption of 2,4-D and antibiotics are viewed and analyzed in a five-stage (awareness, information, application, trial, and adoption) framework. Relative use of information sources by stages in the adoption process is considered.

9. Beal, G. M., and Bohlen, J. M. *The Diffusion Process.* Ames: Iowa Agricultural Extension Service Special Report 18, (March, 1957).

This paper is a summary of a flannelboard presentation (frequently used by the authors) on how farm people accept new ideas. It is based primarily on findings of 35 research studies conducted by rural sociologists in the United States during the past 20 years.

10. Beal, G. M., Bohlen, J. M., and Campbell, L. *The Fertilizer Dealer: Attitudes and Activity.* Ames: Iowa Agricultural Experiment Station Report 16, (November, 1958).

This study was exploratory. However, results revealed that fertilizer was a minor part of the business operation of the average dealer. Nearly all of the dealers thought that the farmers expected them to serve as consultants on nearly all farm matters.

11. Beal, G. M., and Rogers, E. M. "Informational Sources in the Adoption Process of New Fabrics," *Journal of Home Economics,* **49** (October, 1957), pp. 630-34.

Sources of information used by farm women in the adoption of man-made fibers are reported and analyzed in a five-stage adoption framework.

12. Beal, G. M., Rogers, E. M., and Bohlen, J. M. "Validity of the Concept of Stages in the Adoption Process," *Rural Sociology,* **22** (June, 1957), pp. 166-68.

The subjectively formulated five-stage individual adoption process commonly used by rural sociologists in their research is empirically tested and found to be generally valid.

13. Bertrand, A. L., and Hitt, H. L. *Radio Habits in Rural Louisiana.* Baton Rouge: Louisiana Agricultural Experiment Station Bulletin 440, (September, 1949).

Peak times for radio listening were noon to 1:00 P.M. and 7:00 to 9:00 P.M. on weekdays; Saturday, 7:00 to 9:00 P.M. and noon to 1:00 P.M. On Sundays, a plateau was maintained from 8:00 A.M. to 7:00 P.M., followed by an increase up to 9:00 P.M. Daytime program preferences for both farm operators and wives were news, music, and drama, in the order mentioned.

14. Blackmore, J., Dimit, R. M., and Baum, E. L. *Test-Demonstration Farms and the Spread of Improved Farm Practices in Southwest Virginia.* Knoxville: Tennessee Valley Authority Agricultural Economics Branch, Division of Agricultural Relations Report No. P 55-3, (June, 1955).

Test-demonstration farmers were instrumental in the adoption of new farm practices by other farmers. They were also named more often as innovators and farm information sources than nontest-demonstration farmers. The number of improved farm practices adopted per farm operator was negatively related to distance from the nearest test-demonstration farm up to a distance of two miles.

15. Bonser, H. J. *Better Farming Practices Through Rural Community Organizations.* Knoxville: Tennessee Agricultural Experiment Station Bulletin 286, (May, 1958).

Farm practice adoption levels in nine communities which had community clubs were no higher immediately preceding club organization than in the communities in the same counties that did not form clubs. However, communities with clubs showed more marked improvement in farm practice adoption rates during the course of the experiment.

16. Bonser, H. J. *Better Homemaking Practices Through Rural Community Organizations.* Knoxville: Tennessee Agricultural Experiment Station Bulletin 287, (May, 1958).

Six of the seven practices considered in the study were adopted to a greater degree by farm women living in the communities having community clubs than in those having no clubs. Community clubs provided effective media for disseminating homemaking information, but memberships were drawn from a somewhat limited status range.

17. Brooks, R. C., Jr. " 'Word-of-Mouth' Advertising in Selling New Products," *The Journal of Marketing,* **22** (October, 1957), pp. 154-61.

The existence of a powerful network of interpersonal relations within the consumer market was indicated by numerous studies cited in the report. It was also found that word-of-mouth influence may retard as well as facilitate market expansion.

18. Bureau of Agricultural Economics. *Attitudes of Rural People Toward Radio Service, A Nation-Wide Survey of Farm and Small-Town People.* Washington: U.S., Department of Agriculture (January, 1946).

Radio had become a highly valuable part of everyday living in most rural homes in the United States. Women tended to value radio more highly than men did, but education, income, and age seemed to make little difference. Men in particular regarded radio as an important source of farm information.

19. Cocking, W. *The Regional Introduction of Educational Practices in Urban School Systems of the United States.* New York: Columbia University Teachers College, Bureau of Publications Study No. 6, 1951.

In addition to providing very significant findings regarding the diffusion rates of different educational practices in school systems in the United States, many suggestions are made for further needed research. Findings from this study are viewed in the light of findings from other similar studies. An excellent review of the latter is included.

20. Coleman, A. L., and Marsh, C. P. "Differential Communication Among Farmers in a Kentucky County," *Rural Sociology,* **20** (June, 1955), pp. 93-101.

Wide differentials between neighborhoods in access to and in contact with various communication media were revealed. Neighborhoods ranking low in contacts with one medium usually ranked low in contacts with others. Neighborhood differentials remained when other selected factors were held constant.

21. Coleman, J., Katz, E., and Menzel, H. "The Diffusion of an Innovation Among Physicians," *Sociometry,* **20** (December, 1957), pp. 253-70.

Social processes intervening between the initial trial of a new drug (by a few local innovators) and its final use (by virtually the entire medical community) were identified and their influence assessed. Social networks first operated only among doctors well integrated into the medical community by professional ties. The influence then spread through the friendship network of doctors closely associated as friends, after which social influence became relatively inoperative among socially isolated doctors.

22. Copp, J. H. "Toward Generalization in Farm Practice Research," *Rural Sociology,* **23** (June, 1958), pp. 103-11.

Multiple correlation analysis revealed that size of farming operations, and personality orientation of the farm operator toward his work, were most instrumental in explaining variance in farm practice adoption rates. Data for the study were drawn from interviews with 167 cattlemen in Kansas, and 177 dairy farmers in Wisconsin.

23. Copp, J. H., Sill, M. L., and Brown, E. J. "The Function of Information Sources in the Farm Practice Adoption Process," *Rural Sociology,* **23** (June, 1958), pp. 146-57.

This article reports a study of the use of information sources by farm operators in the adoption of farm practices and develops a model to account for the differential use of sources.

24. Copp, J. H. *Personal and Social Factors Associated with Adoption of Recommended Farm Practices Among Cattlemen.* Manhattan: Kansas Agricultural Experiment Station Bulletin 83, (September, 1956).

This study investigated aspects in the life situation of farm operators assumed to be influential in the adoption of recommended farm practices. Multiple regression analyses revealed that a general predisposition to adopt recommended farm practices was significantly related to gross farm income,

acres operated, number of cattle, acceptance of professional and scientific values, and mental flexibility of the farm operators.

25. Dean, A., Aurbach, H. A., and Marsh, C. P. "Some Factors Related to Rationality in Decision Making Among Farm Operators," *Rural Sociology,* **23** (June, 1958), pp. 121-35.

The study showed that the greater the economic rationality of a farmer in matters related to farming, the more likely he was to adopt improved farm practices. It is also suggestive of how economic rationality may operate as an intervening variable between exposure to educational media and final adoption of farm practices.

26. Dodd, S. C. "Diffusion is Predictable: Testing Probability Models for Laws of Interaction," *American Sociological Review,* **20** (August, 1955), pp. 392-401.

Mathematical models were formulated and tested for usability as predictive models in various aspects of diffusion. The conclusion: diffusion is predictable.

27. Duncan, J. A., and Kreitlow, B. W. "Selected Cultural Characteristics and the Acceptance of Educational Programs and Practices," *Rural Sociology,* **19** (December, 1954), pp. 349-57.

Heterogeneous neighborhoods were characterized by higher socio-economic status, larger farm practice adoption scores, more favorable attitudes toward improved school practices, and greater participation in agricultural and school organizations than homogeneous neighborhoods.

28. Emery, F. E., and Oeser, O. A. *Information, Decision, and Action.* Melbourne: Melbourne University Press; New York: Cambridge University Press, 1958.

Farm practice adoption is viewed as evidence of effective communications. The study is distinctive in its use of theory and refined methodology. It is a reading "must" for those interested in research relating to the diffusion of farm information and the adoption of new farm practices.

29. Fanelli, A. A. "Extensiveness of Communication Contacts and Perceptions of the Community," *American Sociological Review,* **21** (August, 1956), pp. 439-45.

High communicators about community matters had a stronger community identification, participated more in community organization and projects, and tended to have a more correct perception of community matters than low communicators. The major contribution of the study centers about the relationship of communication concerning community problems to community perception, identification, and participation.

30. Fitzsimmons, C., and Holmes, E. G., *Factors Affecting Farm Family Goals.* Lafayette: Indiana Agricultural Experiment Station Research Bulletin 663, (July, 1958).

Factors which affected family goals most were stage in the family cycle, and age of the family head. Years schooling completed by the family head, family income, and size of the family appeared to make little difference in the goals of families with relatively high incomes.

31. Fliegel, F. C. "A Multiple Correlation Analysis of Factors Associated with Adoption of Farm Practices," *Rural Sociology,* **21** (September–December, 1956), pp. 284-92.

Existence of a generalized characteristic of farm practice adoption was suggested by the study. Four of the six independent variables accounted for a significant proportion of the variation in the adoption index when influence of the other independent variables were held constant. These were familism, contacts for information on farming matters, level of living, and attitude toward farm practices. Those not significantly related were size of farming operations, contacts with formal versus informal information sources, and concentration of authority in farm management decisions in the father.

32. The Foundation for Research on Human Behavior. *The Adoption of New Products—Process and Influence.* Ann Arbor: Braun & Brumfield, Inc., 1959.

Substantive materials reported at a seminar bearing the title of the publication are presented in a readily readable form which stages in the adoption process used as the major frame of reference. Findings are drawn primarily from Missouri and Iowa studies. Conclusions center primarily about the role of information sources in the individual adoption process.

33. Gauger, C. J. "An Iowa County Agent Takes A Look at the Effectiveness of Television," Ames: Iowa State University, mimeographed report, (February, 1953).

The study demonstrates the manner in which television programming can be used in, and integrated with, group discussions.

34. Gross, N., and Taves, M. J. "Characteristics Associated with Acceptance of Recommended Farm Practices," *Rural Sociology,* ***17*** (December, 1952), pp. 321-27.

None of the 25 factors studied differentiated between accepters and non-accepters of all 10 recommended farm practices at the 10 per cent level of statistical significance, although some showed a marked tendency to do so. The top four factors in descending order of discrimination were: reading college bulletins, membership in cooperatives, age, and frequency of trips to the nearest metropolitan center.

35. Hassinger, E. "Stages in the Adoption Process," *Rural Sociology,* ***24*** (March, 1959), pp. 52-53.

The author is critical of the five-stage adoption process commonly used by rural sociologists in diffusion research. He is particularly concerned about the passive nature of the first stage.

36. Hess, C. V., and Miller, L. F. *Some Personal, Economic, and Sociological Factors Influencing Dairymen's Actions and Success.* State College: Pennsylvania Agricultural Experiment Station Bulletin 577, (June, 1954).

Many dairymen appeared to lack much knowledge required for proper decision making. Operators rating high on a knowledge test had higher producing herds and had higher labor incomes than farm operators with low scores. The former also culled their herds more rigidly and had adopted more recommended dairy practices than the latter. Conception of a good

level of milk production and high rating of own herd in relation to neighbors' served as a source of motivation to improve herd performance.

37. Hoffer, C. R. *Acceptance of Approved Farming Practices Among Farmers of Dutch Descent.* East Lansing: Michigan Agricultural Experiment Station Special Bulletin 316, (June, 1942).

A celery-growing bulletin was a positive influence on the adoption of recommended practices by celery growers. However, a Dutch edition of the bulletin was not superior to the English edition among Dutch farmers who were inclined to use their native language. Growers who read the bulletin, attended the meetings, and otherwise came in contact with influences promoting scientific methods adopted more recommended celery-growing practices than those who did not. This study departs from the commonly used *ex post facto* method of "diffusion" research, and is therefore unusual in the experimental design used.

38. Hoffer, C. R. *Selected Social Factors Affecting Participation of Farmers in Agricultural Extension Work.* East Lansing: Michigan Agricultural Experiment Station Special Bulletin 331, (June, 1944).

This study demonstrated that social processes such as participation in agricultural extension work, can be analyzed and measured in an objective manner. Indications were that participation in formal groups operated as a causal factor in the adoption of improved farm practices.

39. Hoffer, C. R. *Social Organization in Relation to Extension Service in Eaton County, Michigan.* East Lansing: Michigan Agricultural Experiment Station Special Bulletin 338, (August, 1946).

Farm operators were able to identify potential extension leaders and were generally favorable to the Agricultural Extension Service. They generally used several sources of information to obtain needed information about farming.

40. Hoffer, C. R., and Gibson, D. L. *The Community Situation as it Affects Agricultural Extension*

Work. East Lansing: Michigan Agricultural Experiment Station Special Bulletin 312, (October, 1941).

Conditions within the community with regard to leadership, group organization, and morale were found to be important determinants in the success of extension programs.

41. Hoffer, C. R., and Stangland, D. *Farmers' Reactions to New Practices*. East Lansing: Michigan Agricultural Experiment Station Technical Bulletin 264, (February, 1958).

Although reasons for use or failure to use a farm practice varied greatly, farmers' attitudes were often the determining factors. Farmers who identified themselves with the efficiency, self reliance, and progress models tended to adopt more farm practices than those who identified with security and conservatism models.

42. Hoffer, C. R., and Stangland, D. "Farmers' Attitudes and Values in Relation to Adoption of Approved Practices in Corn Growing," *Rural Sociology*, **23** (June, 1958), pp. 112-20.

Farmers who identified themselves with models of efficiency, willingness to take risk, and progress adopted more recommended farm practices than those who did not. Those who identified with conservatism and security models adopted the fewest farm practices.

43. Johnson, G. "Farmers' Decisions on New Practices," *Journal of Farm Economics*, **40** (December, 1958), pp. 1393-1406.

Information about farm production and new technology was most needed by farmers in the organization and management of their farms. Information regarding prices was easiest to get; noncommunicative sources of information were used more than communicative sources. With few exceptions college publications seemed to be supplying information roughly in proportion to the perceived importance farmers attached to information types in managing and operating their farms.

44. Johnson, G. L., and Haver, C. B. *Decision-Making Principles in Farm Management*. Lexington: Ken-

tucky Agricultural Experiment Station Bulletin 593, (January, 1953).

This bulletin summarizes some of the decision-making principles that seem warranted by previous research; illustrates the usefulness of such principles in farm management decisions; sets up classifications of farm-management problems with regard to degrees of knowledge farmers have about these problems; and provides a bibliography for those who may be interested in delving further into the logic of the principles presented.

45. Katz, E. "The Two-Step Flow of Communication: An Up-to-Date Report on an Hypothesis," *The Public Opinion Quarterly,* **21** (Spring, 1957), pp. 61-78.

The two-step communication theory holds that people who are more exposed to communicative messages via the mass media pass on what they see and hear to people who are less exposed. Data cited tended to verify this hypothesis, but to raise questions regarding its adequacy.

46. Katz, E., and Lazarsfeld, P. F. *Personal Influence.* Glencoe: The Free Press, 1955.

A comprehensive treatment of the manner in which personal influence operates in marketing, fashion, movie selection, and public affairs decisions. It is a reading "must" for those interested in the role of personal influence in decision making.

47. Larson, O. F. "Processes of Decision-Making in the Community," *The Research Clinic on Decision Making.* Pullman: State College of Washington, (August, 1958), pp. 52-59.

Verbal indication of a perception that one's ideas and interests are considered in community affairs was positively related to organizational leadership, level of identification with the community, participation in formally organized groups, educational achievement, place of residence, and attitude toward living in the community.

48. Lazarsfeld, P. F., Berelson, B., and Gaudet, H. *The Peoples' Choice.* New York: Columbia University Press, 1948.

A study of personal influence in decisions regarding voting behavior in which influentials were defined by self designation. It is a classic in its field.

49. Lewin, K. "Forces Behind Food Habits and Methods of Change," *The Problem of Changing Food Habits.* Washington: National Research Council Bulletin 108, (October, 1943).

Group discussion and decision methods of teaching were found to be far superior to the lecture method in implementing changes in food habits. Findings were related to a special theoretical framework devised by the author.

50. Lionberger, H. F. *Low-Income Farmers in Missouri: Their Contacts with Potential Sources of Farm and Home Information.* Columbia: Missouri Agricultural Experiment Station Research Bulletin 441, (May, 1949).

Reading and radio contacts were less affected by communicative barriers than personal contacts with educational agencies; also, indications were that families were reached in a differential manner by different potential sources of information. The primary contribution of this study is to give an understanding of contacts that low-income farmers in good farming areas have with potential sources of farm information.

51. Lionberger, H. F. *Sources and Use of Farm and Home Information by Low-Income Farmers in Missouri.* Columbia: Missouri Agricultural Experiment Station Research Bulletin 472, (April, 1951).

Sources of farm information used by low-income farmers in prosperous farming areas of Missouri are examined together with factors which condition source use and adoption of improved farm practices. Perhaps the unique feature is that low-income farmers in relatively good farming areas are considered rather than low-income farmers where incomes are universally low.

52. Lionberger, H. F. "Some Characteristics of Farm Operators Sought as Sources of Farm Information in a Missouri Community," *Rural Sociology,* ***18*** (December, 1953), pp. 327-38.

Farmers most frequently sought as sources of farm information possessed distinctive characteristics which were pertinent to the diffusion and use of farm information. Contrary to some studies, innovators and persons sought as information sources tended to be one and the same persons.

53. Lionberger, H. F. "The Relation of Informal Social Groups to the Diffusion of Farm Information in a Northeast Missouri Farm Community," *Rural Sociology,* ***19*** (September, 1954), pp. 233-43.

Social cliques were defined as mutually interlocking pairs of best friends who were known to associate as social equals, while informal groups of a nonclique nature were composed of kinship groups, work exchange groups, and loosely composed pseudo-groups consisting of interlocking pairs of best friends who associated together on some basis other than social equality. These informal groups facilitated information-seeking contacts among fellow members but tended to operate as barriers in situations where mechanisms of clique exclusion were involved. Differences in the proportion of contacts for information used were in evidence in all five levels of a hypothesized clique resistance gradient when quest for farm information was from local influentials.

54. Lionberger, H. F. *Information-Seeking Habits and Characteristics of Farm Operators.* Columbia: Missouri Agricultural Experiment Station Research Bulletin 581, (April, 1955).

Generally, the greatest differences in characteristics examined as between users and non-users of institutionalized sources of farm information. Those using the county agent as a source and those using some other institutionalized source were not greatly different. As a group, users of institutionalized information sources had larger farms, more schooling, higher incomes, and had adopted more improved farm practices than nonusers. Farmers who did not use institutionalized sources of farm information obtained information from persons who were more capable as farmers than themselves. Friends and neighbors were the most universally used source of all those considered.

55. Lionberger, H. F. *Low-Income Farmers in the Good Farming Areas of Missouri: Their Characteristics, Resources, Sources of Information.* Col-

umbia: Missouri Agricultural Experiment Station Bulletin 668, (February, 1956).

Conditions favorable to improvement of the economic status of low income farmers were availability of good quality land, favorability to farming and education for farming, recognition of significant problems with regard to farming, and the tendency to seek farm information from other farmers more competent than themselves in farming operations. Conditions unfavorable to change were the high proportion of low-income farm operators 65 years of age and over, limited capital resources, and an apparent reluctance to use educational agencies as sources of farm information.

56. Lionberger, H. F. *Television Viewing in Rural Boone County with Special Reference to Agricultural Shows.* Columbia: Missouri Agricultural Experiment Station Bulletin 702, (April, 1958).

Over half of the household heads and wives interviewed saw the "Farm and Home Show" at least occasionally, and over 35 per cent did something (talked to others, wrote for bulletins, went to the county agent, or tried ideas) with regard to the shows seen. The study was conducted in an area where television as a source of farm information was well institutionalized.

57. Lionberger, H. F. "Characteristics and Role of Local Influentials in the Diffusion Process," paper read at seminar of the Foundation for Research on Human Behavior on "Adoption of New Products: The Influence of Individuals and Groups," (November and December, 1958).

Information regarding distinctive characteristics of local influentials in matters related to farming in two Missouri communities are presented as a part of an analysis of the role of local influentials in the diffusion process. Influentials were designated in terms of number of mentions received as most important influences in decisions regarding changes in farm practices made by other farmers.

58. Lionberger, H. F. "The Role of the Mass Media in Decisions to Change Farm Practices and Purchase Farm Supplies With Emphasis on Television and Radio," paper read at seminar of the Foundation for Research on Human Behavior

on "Adoption of New Products: The Influence of Individuals and Groups," (November and December, 1958).

Substantive findings regarding the role of the mass media in decisions to change farm practices and purchase farm supplies in two Missouri communities are reported together with findings from other studies bearing on television impact regarding decisions to change farm practices.

59. Lionberger, H. F. "Community Prestige and the Choice of Sources of Farm Information," *Public Opinion Quarterly,* ***23*** (Spring, 1959), pp. 110-18.

No indication of clear-cut social classes was in evidence. Nevertheless, farmers tended to look up the prestige scale in the quest for farm information from other farmers. The upward look was greatest when "local influentials" were the sources of information sought.

60. Lionberger, H. F., and Coughenour, C. M. *Social Structure and Diffusion of Farm Information.* Columbia: Missouri Agricultural Experiment Station Research Bulletin 631, (April, 1957).

This study presents a comprehensive analysis of social and status factors which structure interpersonal patterns of communication and influence in the adoption of new farm practices in a Missouri community. The influence of the community, neighborhoods, social cliques, and selected status factors in relation thereto is considered. Special methods of analysis are devised and used to assess the importance of the influences operating.

61. Lionberger, H. F., and Hassinger, E. "Neighborhoods as a Factor in the Diffusion of Farm Information in a Northeast Missouri Farming Community," *Rural Sociology,* ***19*** (December, 1954), pp. 377-84.

Neighborhoods tended to localize information-seeking contacts on a person-to-person basis, and showed some tendency to predispose farm operators to a greater preference for other farmers as sources of farm information.

62. Marsh, C. P., and Coleman, A. L. "The Relation of Kinship, Exchanging Work and Visiting to

the Adoption of Recommended Farm Practices," *Rural Sociology,* ***19*** (September, 1954), pp. 291-93.

A direct relationship existed between the farm-practice-adoption score of the farm operator, and the scores of the other farmers named as close associates in kinship, work, and visiting relationships.

63. Marsh, C. P., and Coleman, A. L. "The Relation of Neighborhood of Residence to Adoption of Recommended Farm Practices," *Rural Sociology,* ***19*** (December, 1954), pp. 385-89.

Neighborhood residence was an important determining factor in farm-practice-adoption levels even when socio-economic status, value of crops and products, Farm Bureau membership, and personal contact with professional agricultural advisers were held constant.

64. Marsh, C. P., and Coleman, A. L. "Farmers' Practice-Adoption Rates in Relation to Adoption Rates of 'Leaders,' " *Rural Sociology,* ***19*** (December, 1954), pp. 180-81.

Farm-practice-adoption levels of farmers named as sources of farm information in areas of high farm practice adoption were decidedly higher than those of most farmers, while in areas of low farm practice adoption, persons sought as sources of farm information were about the same as those seeking them.

65. Marsh, C. P., and Coleman, A. L. "The Relationship of Farmer Characteristics to the Adoption of Recommended Farm Practices," *Rural Sociology,* ***20*** (September–December, 1955), pp. 289-96.

Six characteristics of farm operators discriminated between adopters and nonadopters of at least 14 of the 16 practices studied.

66. Matthews, M. T., Jenkins, D. R., and Sletto, R. F. *Attitudes of Edgefield County Farmers Toward Farm Practices and Rural Programs.* Clemson:

South Carolina Agricultural Experiment Station Bulletin 339, (February, 1942).

Most farmers had a favorable attitude toward the main governmental farm programs. Only two were opposed by over 20 per cent of the operators. Those most disapproved were restrictions on cotton acreage, and the purchase of forest land.

67. Menzel, H., and Katz, E. "Social Relations and Innovation in the Medical Profession: The Epidemiology of a New Drug," *Public Opinion Quarterly,* ***19*** (Winter, 1955–56), pp. 337-52.

This study examined the diffusion of a new drug among physicians with particular reference to interpersonal patterns of communication and influence as mediating factors. The hypothesis that face-to-face contacts were important in mediating innovations from outside sources was supported by the study.

68. Merton, R. K. "Patterns of Influence: A Study of Interpersonal Influence and Communications Behavior in a Local Community," in P. F. Lazarsfeld and F. N. Stanton (eds.), *Communications Research 1948-1949.* New York: Harper and Brothers, 1949.

Local influentials were primarily oriented toward the local setting in contrast to cosmopolitans who were oriented toward national and international affairs. This is a pioneer study in the nature of personal influence and the characteristics of influentials.

69. Mississippi Agricultural Experiment Station. *Methods and Techniques for Study in Decision-Making in Regard to Use of Dairy Products.* State College: Mississippi Agricultural Experiment Station Home Economics Series 1, (May, 1957).

A relationship between knowledge concerning the value of milk and use of it in recommended amounts was found. White families consumed more

milk than Negro families. Apparently the value most associated with use of bought ice cream and pie was saving of time.

70. Montague, J. B., Jr. "Personality Variables in Decision Making," *The Research Clinic on Decision Making*. Pullman: State College of Washington, (August, 1958), pp. 60-65.

This study recommends a sociological approach to decision making by employing personality theory in combination with existing concepts and role theory as developed by Parsons and Sarbin.

71. Mort, P. R., and Cornell, F. G. *Adaptability of Public School Systems*. New York: Columbia University Teachers College, 1938.

Research materials relating to the process by which adaptation in school systems takes place are summarized, hypotheses formulated, and ways and means of testing them explored. Materials for the study were drawn from research done at Teachers College, Columbia University, over an unspecified period of approximately 30 years. The publications are much more valuable for insights regarding influences operating in the adaptation of school systems and for hypotheses suggested, than for definitive findings regarding the hypotheses formulated.

72. Mort, P. R., and Cornell, F. G. *American Schools in Transition (How Our Schools Adapt Their Practices to Changing Needs—A Study of Pennsylvania)*. New York: Columbia University Teachers College, 1941.

The process by which adaptations in school systems are made is analyzed. Consideration is directed to identifying factors operating in the process of adaptation, isolating those not previously identified, and to hypothesis formulation and improvement in methodology and technique. Diffusion rates of new adaptations were slow, especially at the early stages. On the average, it took seven times as long for the first 10 per cent acceptance as for the next 40 per cent.

73. Pedersen, H. A. "Cultural Differences in the Acceptance of Recommended Practices," *Rural Sociology*, ***16*** (March, 1951), pp. 37-49.

Danish farmers had adopted significantly more of the recommended dairy, crop, and mechanization practices considered than the Polish farmers. Cultural background factors provided a likely explanation of the adoption differentials.

74. Poirot, J. A. "Use of Available Sources of Homemaking Information by Rural Homemakers in Iowa." Unpublished M.S. dissertation, Iowa State University, 1957.

Farm women had more mass media sources available to them than town women. Homemaking problems recognized by homemakers and the availability of information from reading farm magazines regarding these problems are indicated.

75. Ramsey, C. E., Polson, R. A., and Spencer, G. E. "Values and the Adoption of Practices," *Rural Sociology,* ***24*** (March, 1959), pp. 35-47.

The only significant relationships with regard to values and the adoption of farm practices were between security orientation and the two scale scores considered, between traditionalism and the two scale scores, and between achievement and belief in science on the one hand and the cognitive scale scores on the other. All correlations were very low and collectively explained no more than 10 per cent of the variation in the dependent variable.

76. Rogers, E. M. "Personality Correlates of the Adoption of Technological Practices," *Rural Sociology,* ***22*** (September, 1957), pp. 267-68.

Of seven personality variables considered, only mental rigidity, change orientation, innovation proneness, and adoption self-rating were found to be significantly related to farm practice adoption.

77. Rogers, E. M. "Opinion Leaders in the Communication of Agricultural Technology," paper presented at American Sociological Society meetings, Seattle, 1958.

Opinion leadership was found to be a continuous variable which could be satisfactorily measured by self-identification methods.

78. Rogers, E. M. "Categorizing the Adopters of Agricultural Practices," *Rural Sociology,* **23** (December, 1958), pp. 345-54.

Farm-practice-adoption sequences were generally bell-shaped and tended to approach normality. The recommended scheme for classifying farm operators in terms of time of adoption provided innovator, early adopter, early majority, late majority, and laggard classifications that were exhaustive, mutually exclusive, and were derived from a single classificatory principle.

79. Rogers, E. M., and Beal, G. M. "The Importance of Personal Influence in the Adoption of Technological Changes," *Social Forces,* **36** (May, 1958), pp. 329-35.

Impersonal sources were most important at the awareness stage while personal sources took precedence at the information, application, and trial stages in the adoption process. Personal sources were especially important at the application and trial stages and for late adopters more than for early adopters.

80. Rogers, E. M., and Beal, G. M. *Reference Group Influence in the Adoption of Agricultural Technology*. Ames: Iowa State University, 1958.

The role of referents and of reference groups in the adoption of new farm practices were examined by the use of projective techniques. Neighbors constituted the most important reference group for most farmers with late adopters being more dependent upon neighbors and family ties than early adopters.

81. Ross, D. H., and others (eds.). *Administration for Adaptability,* Vol. II. New York: Columbia University Teachers College, 1951.

This is part of a four-volume series of publications by The Teachers College, Columbia University, relating to the administration of schools for adaptability. This volume summarizes the substantive findings of some 70 studies under headings concerned with the adaptation process and agencies in the process of bringing about change. On the average, it took about 50 years from recognition of a need for change in educational systems to the time when something was first done about it, and another 50 years to get

near-complete adoption of the change. Three per cent adoption often took 15 years or more while the next three per cent was obtained in about one-fifth of the time.

82. Ryan, B. "A Study in Technological Diffusion," *Rural Sociology,* ***13*** (September, 1948), pp. 273-85.

Technological diffusion of hybrid seed corn in Iowa was traced from its inception to virtual complete adoption. Time of adoption patterns were established and compared to time of initial information.

83. Ryan, B., and Gross, N. "The Diffusion of Hybrid Seed Corn in Two Iowa Communities," *Rural Sociology,* ***8*** (March, 1943), pp. 15-24.

A study of the rate of adoption of hybrid seed corn on a state-wide basis in Iowa. About 13 years were required to obtain nearly complete adoption. Nearly one-third of the period passed before adoption increased appreciably.

84. Ryan, B., and Gross, N. *Acceptance and Diffusion of Hybrid Seed Corn in Two Iowa Communities.* Ames: Iowa Agricultural Experiment Station Research Bulletin 372, (January, 1950).

This study considers the diffusion time sequence of hybrid seed corn in two Iowa communities; the pattern of acceptance by individual farmers; the function and relative importance of information sources and media in implementing the adoption of hybrid corn; and the manner in which acceptance is related to personal, economic, and social characteristics of the farm operators.

85. Simmons, W. R., and Associates Research, Inc. *How Television Changes Strangers Into Customers.* New York: National Broadcasting Company, (May, 1955).

The impact of television advertising on a consumer audience is well illustrated by the study. Television advertising sharpened awareness of brand names, related brand names to the product and its uses, drove home the trade marks, sold the slogans, enhanced brand reputations, shifted brand preferences, and finally, impelled people to buy brands advertised on television.

86. Spaulding, I. A. *Farm Operator Time-Space Orientations and the Adoption of Recommended Farming*

Practices. Kingston: Rhode Island Agricultural Experiment Station Bulletin 330, (June, 1955).

The feasibility of using stimulus pictures and projective techniques in interviewing farmers and of their potential usefulness in studying such elusive characteristics as time and space orientation is suggested. Only two cases were considered, so substantive findings can be considered only suggestive.

87. Subcommittee for the Study of the Diffusion of Farm Practices, North Central Rural Sociological Committee. *How Farm People Accept New Ideas.* North Central Regional Publication No. 1, Ames: Iowa Agricultural Extension Service, (November, 1955).

This publication theorized the process by which new farm ideas are accepted by farm people. It is based primarily on the findings of studies conducted by rural sociologists. It included a descriptive summary of the conditions and influences involved in the process by which farm people learn about new farm practices and finally come to adopt them.

88. *Wallaces' Farmer and Iowa Homestead. InFARMation Please No. 3 (Sources of Information Utilized by Iowa Farm Operators and Homemakers, 1955)*. Des Moines: *Wallaces' Farmer and Iowa Homestead,* (October, 1956).

This study supplies information on a state-wide basis regarding sources of farm and home information used by farm operators and their wives in Iowa. This is the third of a series of three publications concerning sources of farm and home information used by Iowa farmers and homemakers. They were done by the Statistical Laboratory of Iowa State University for *Wallaces' Farmer and Iowa Homestead.*

89. Wilcox, W. W., and Lloyd, O. G. *The Human Factor in the Management of Indiana Farms.* Lafayette: Indiana Agricultural Experiment Station Bulletin 369, (August, 1932).

It was found that environmental factors most closely related to variations in labor income were: help and stimulation received from wives; ambition to make economic progress; and interest in farming as an occupation.

90. Wilkening, E. A. "Sources of Information for Improved Farm Practices," *Rural Sociology*, **15** (March, 1950), pp. 19-30.

Farm operators with high socio-economic status tended to use agricultural agencies most as information sources while low status farmers made greater use of other farmers and dealers. Information sources used also varied with type of practice.

91. Wilkening, E. A. "Social Isolation and Response of Farmers to Agricultural Programs," *American Sociological Review*, **16** (December, 1951), pp. 836-37.

Social isolation was associated with unfavorable attitudes toward agricultural programs and nonadoption of innovations in farming. Although there was a tendency to resist acceptance of new ideas, social isolation was more likely to take the form of opposition to program administration.

92. Wilkening, E. A. *Acceptance of Improved Farm Practices in Three Coastal Plain Counties.* Raleigh: North Carolina Agricultural Experiment Station Technical Bulletin 98, (May, 1952).

This study is concerned with the manner in which acceptance of improved farm practice rates vary with locality and type of practice, socio-economic characteristics of farm operators associated with the acceptance of improved farm practices, how farmers obtain information about same, the extent to which farmers with different socio-economic status obtain information from different sources, the manner in which source use is related to the adoption of improved farm practices, and the extent to which acceptance is related to selected attitudes toward education and farming.

93. Wilkening, E. A. "Informal Leaders and Innovators in Farm Practices, *Rural Sociology*, **17** (September, 1952), pp. 272-75.

Innovators and persons sought as sources of farm information were not one and the same. A distinction was made between community and neighborhood innovators. Differential characteristics of these special functionaries suggest the need for distinctive educational programs directed to the adoption of new farm practices.

94. Wilkening, E. A. *Adoption of Improved Farm Practices as Related to Family Factors.* Madison: Wisconsin Agricultural Experiment Station Research Bulletin 183, (December, 1953).

Family factors positively related to farm-practice-adoption rates were: adoption of family living practices; enrollment of children in farm projects; encouragement of new practices by children; share arrangements to pay sons; favorability to education for farming; and social participation in formal groups. Factors either not correlated or negatively correlated were: amount of family labor done on the farm; decision making centered in the father; high emphasis on familism; high informal social participation, and high value placed upon owning a farm free of debt.

95. Wilkening, E. A. "Roles of Communicating Agents in Technological Change in Agriculture," *Social Forces,* ***34*** (May, 1956), pp. 361-67.

Different sources of farm information played different roles in the adoption of improved farm practices. Mass media were most important at the awareness stage and for obtaining additional information. Personal sources were most important at later stages in the adoption process.

96. Wilkening, E. A. "Joint Decision-Making in Farm Families as a Function of Status and Role," *American Sociological Review,* **23** (April, 1958), pp. 187-92.

The wife's status was positively associated with her involvement in major decisions only in those families having both high income and high social participation. The joint involvement of husband and wife in decision making tended to decline with the degree of commercialization in farming. The author suggested that joint decision making of husband and wife is a function of the extent to which farm and family decisions are viewed as having joint consequences for both farm and home.

97. Wilkening, E. A., and Johnson, D. "A Case Study in Decision-Making Among A Farm Owner Sample in Wisconsin," *The Research Clinic on Decision Making.* Pullman: State College of Washington, (August, 1958), pp. 1-20.

Changes in farm practices were dependent upon goals uppermost in the minds of farmers considering the change. As expected, money making was the most important consideration. However, it was clear that noneconomic considerations were most important in some decisions and consistently more important for some persons than for others. The importance of equipment and money resources in the hypothetical decision-making problems considered was not consistently associated with the adoption of 17 farm practices.

98. Williams, M. S. "Farmers' Decisions in the Use of Fertilizer," *Journal of Farm Economics,* ***40*** (December, 1958), pp. 1407-17.

Salient conclusions related to the importance of personal discussion and influence in decisions regarding the use of fertilizer; the inability of farmers to make adjustments from fertilizer use on one crop to use on another; the lack of knowledge regarding fertilizer composition and use; failure to analyze prospective use in terms of increased yield per acre in arriving at use decisions; and the fatalistic view of farming that characterized the thinking of many farmers.

99. Wilson, M. C., and Gallup, G. *Extension Teaching Methods and Other Factors That Influence Adoption of Agricultural and Home Economics Practices.* Washington: U. S. Department of Agriculture Federal Extension Service Circular 495, (August, 1955).

This is a reference manual for inservice agricultural extension workers, prospective extension workers, and graduate students in extension education. It is directed to the improvement of extension teaching methods. Data for the summary treatment were drawn from pertinent research relating to formal education, psychology, and salesmanship. Studies done by the Agricultural Extension Service during a span of approximately 30 years are emphasized.

100. Wilson, M. C., and Moe, E. O. *Effectiveness of Television in Teaching Sewing Practices.* Washington: U. S. Department of Agriculture Federal Extension Service Circular 466, (June, 1951).

This study demonstrates the potential effectiveness of television demonstration as a means of changing overt behavior in a select audience and the utility of a supplementary publication as part of a television educational program.

B. Bibliography of Related Studies

Abell, H. C. "The Use of Scale Analysis in a Study of the Differential Adoption of Homemaking Practices," *Rural Sociology*, ***17*** (June, 1952), pp. 161-65.

Adams, J. S. "Advice Seeking and Exposure to Mass Media as a Function of Need for Cognition," Stanford: Stanford University, 1958 (mimeographed).

Alford, W. D. "Radio-Television Listening Habits in Eastern Massachusetts," *The Transmitter*, (special issue), Amherst: University of Massachusetts, (August, 1953).

Axinn, G. H. "Communication Habits of Delaware Farmers," *Journalism Quarterly*, ***30*** (Winter, 1953), pp. 74-75.

Beal, G. M. "Part III—The Opportunities (How Does Social Change Occur?)," *A Basebook for Agricultural Adjustment in Iowa*. Ames: Iowa Cooperative Extension Service Special Report 22, (May, 1958), pp. 1-5.

Beal, G. M., and Bohlen, J. M. "Dealer and Farmer Attitudes and Actions Related to Fertilizer," paper given at Midwest Regional Meeting of the National Plant Food Institute, Chicago, February 14, 1958.

Beal, G. M., and Rogers, E. M. "Communicating with Farmers," *Better Farming Methods,* **30** (September, 1958), pp. 12-15.

Beal, G. M., and Rogers, E. M. "The Scientist as a Referent in the Communication of New Technology," *Public Opinion Quarterly,* **22** (Winter, 1958-59), pp. 555-63.

Bertrand, A. L., and Bates, F. L. *Television in Rural Louisiana.* Baton Rouge: Louisiana Agricultural Experiment Station Bulletin 518, (December, 1958).

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